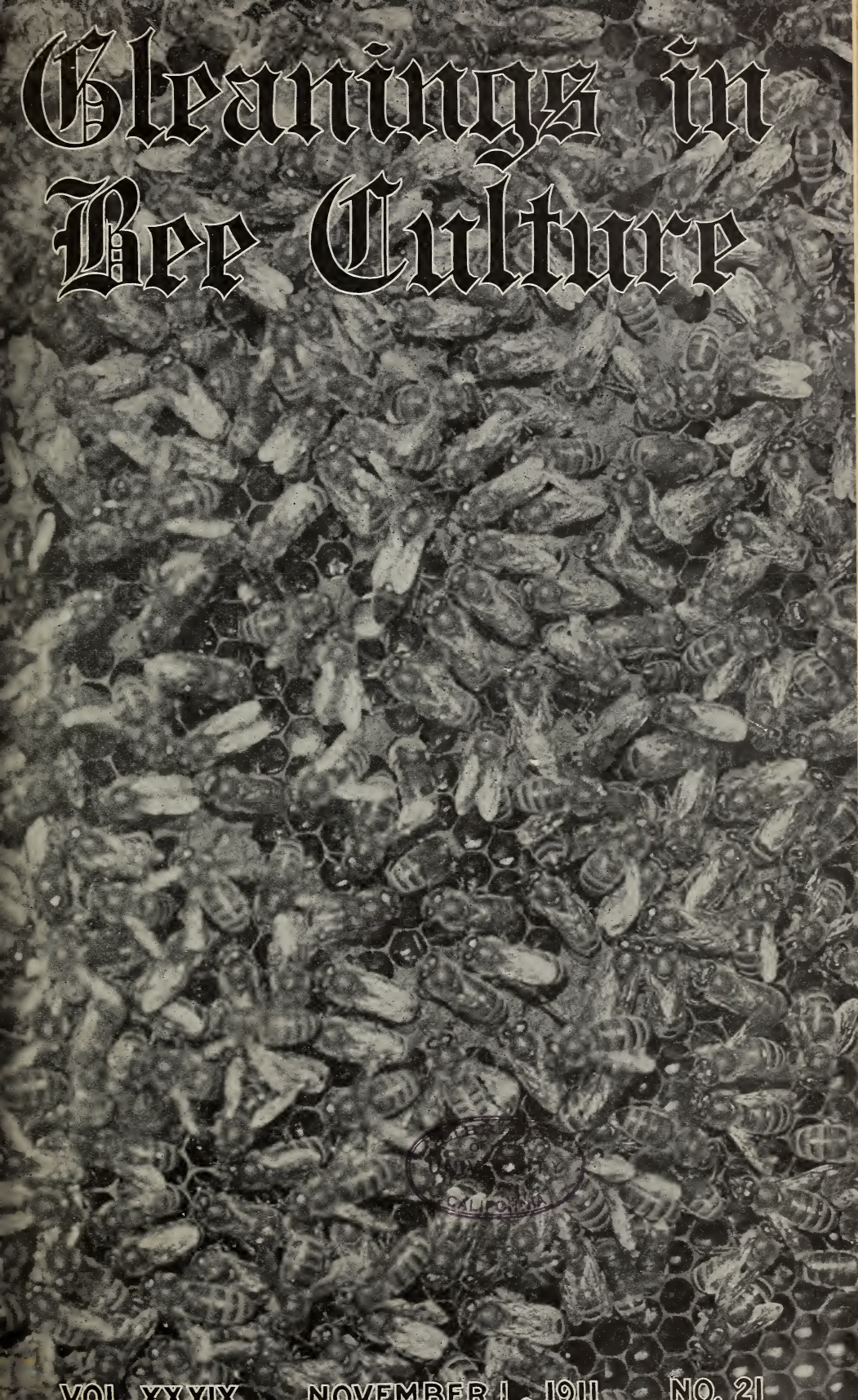


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Gleanings in Bee Culture



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Editorial

A PECULIAR FALL; CLOVER TAKING A NEW START.

LAST spring was excessively hot and dry, and many of us expected an early frost; but up to this date, Oct. 28, no severe frost has occurred in our locality. On the other hand, we have had rain, rain, rain, almost every other day. Farmers are complaining that they can not get their crops from the fields nor get in their wheat. But what is tough on our friends the farmers is good for bee-keepers. The clovers are making a wonderful growth. The setback they received during the spring and summer will be more than made up by favorable conditions this fall.

BEEES AT THE CALIFORNIA APPLE SHOW; BEEES AND FRUIT.

AT the California apple show we understand that the bee-keeping industry was well represented. This combination is as it should be, because bee-keeping and fruit-growing go well together. The fact is, they are almost inseparable. The time was when there was antagonism between the fruit-growers and the bee-keepers of California; this was markedly so in the case of the pear-growers and the bee-keepers. That sort of antagonism has now given way to a feeling of co-operation, and the acknowledgment has repeatedly been made by the most progressive fruit-growers of the country that the bees are their best friends.

MARIAN HARLAND ON HONEY.

IF Marian Harland derives any pleasure in "knocking honey" as she is doing in some large full-page advertisements of another food product, it is her privilege and right we suppose; but will not thousands have less confidence in her opinion on cookery and food products than formerly? If her statements that honey is "distasteful" and has a "cloying quality" were true we could accept them with some complacency. If by "cloy" she means that honey leaves a strong aromatic flavor in the throat, that may be true of some honey. That is what most people like. If she means that it stops up the system she is clearly wrong. Honey does not "clog" nor "stop up" the system. It has the very opposite effect. It is often taken and recommended as a

mild laxative. As to its being "distasteful," ask the dear people of this country who annually consume twenty million dollars worth every season. Why is honey always used as a basis of comparison when the sweetness of other food products are mentioned? It is the finest and most wholesome sweet in the world, and has been so recognized for centuries. Some leading physicians are recommending honey for sick people and invalids. See what is said on this subject in another column.

DEATH OF R. W. HERLONG, OF FORT WHITE, FLA., ONE OF THE MOST EXTENSIVE BEE-KEEPERS OF THE UNITED STATES.

WE regret to receive the following letter from our correspondent, Mr. J. J. Wilder, of Cordele, Ga., announcing the death of Mr. R. W. Herlong, of Fort White, Fla.

Mr. R. W. Herlong, of Fort White, Fla., died Oct. 11. As you know, he was the leading and most extensive bee-keeper in Florida, and well known to the bee-keeping world. We feel sad over the loss of one of the best in our ranks. He was sick only six days.

We will try to get you more particulars, as we know you will be glad to make mention of his death.

Cordele, Fla., Oct. 14.

J. J. WILDER.

It will be remembered that our special correspondent, Mr. E. G. Baldwin, who has been writing a series of articles on Florida, wrote up Mr. Herlong in our issue for Aug. 1, this year. It seems that the deceased started eleven years ago with only three colonies of bees. From that modest beginning he increased until he had 900 colonies in 13 apiaries, ranging from 2½ to 10 miles apart. He operated in a section where practically all his marketable honey came from one source—the partridge pea. While most of the bee-keepers of Florida produce extracted honey our friend ran almost exclusively for comb.

It is not often that a bee-keeper can make such a record as this in so short a time as eleven years, and we should be pleased to get further facts in regard to his life.

THE IMPORTANCE OF SELLING HONEY EARLY; THE WESTERN HONEY MARKET

BEGINNING TO SAG.

OUR readers will remember that we have preached the doctrine of selling honey early, and selling before the holidays. Sometimes

it would be better to have the crop all cleaned up by Oct. 1.

In our Honey Column in this issue it will be noticed that Manager Frank Rauffuss, of the Colorado Honey-producers' Association, writes that "warm weather and an abundance of fruit has had a depressing influence on the local honey market, and, for that matter, on the carload business." He then proceeds to quote lower prices than were named in his earlier quotations. Compare his quotations in Honey Column for Sept. 15 and in this issue.

When the Colorado market sags, it has a tendency to affect the *general* market. While the milk has been spilled for this year, it will serve as a lesson for the coming season. There are too many bee-keepers who hold back their crops until the last minute; then, discovering that the price does not advance but shows a weakness, they get into a panic and proceed to unload, *usually all at once*, with the inevitable result that the market begins to go to pieces.

This year of *all* years, when honey is so scarce, the policy of holding back for better prices was most unfortunate. If the large producers would not wait until they encounter the competition of large shipments of fruit, the honey market, this time of the year, would be more stable.

CAN YOU FIND THE QUEEN?

OUR cover for this issue presents an interesting view of a comb of bees in the early fall, after the queen had begun to slacken up on egg-laying, but had been stimulated to further efforts by feeding.

The workers in the immediate vicinity of the queen have turned toward her in their customary manner when she stops for an instant—at least eight of them having noticed her, as shown. It must be remembered that these bees were in a state of great activity, running rapidly over the comb, and behaving as bees generally do in strong sunlight. This fact is shown by the positions of the various bees. For instance, the wings of some of them are stretched out while others are folded back in place. The strong sunlight was reflected from the shining wings, thus causing the unduly white appearance in some instances.

In at least one case a couple of bees have their "heads together," comparing notes or making an investigation, possibly. Others have their heads in the cells, probably feeding larvæ.

In the cells are eggs and larvæ in all stages of growth—one larva in particular, just behind the queen, having nearly reached the age when it will straighten out in the cell and be capped over. This particular comb, or, rather, the section of it shown, contains no honey. The oval-shaped white spot shown in a number of places is the reflection of the sunlight on the polished bottom of the cell.

This picture as it appears is slightly larger than the natural size. It will be noticed

that the comb measures about four cells to the inch—about the size of drone comb—whereas it should measure, being worker comb, five cells to the inch.

A VISIT FROM AN EXTENSIVE BEE-KEEPER OF UTAH; HONEY AS A FOOD AND MEDICINE.

A FEW days ago we were favored with a visit from Mr. A. G. Anderson, of Ferron, Utah, one of the most extensive bee-keepers of Utah, and one who measures his crops by the carload. We found Mr. Anderson not only a producer of honey but an ardent champion of its value as a food and medicine. In the course of our conversation we gleaned some facts that are worth recording. Among other things, he said that Dr. Nuttall, a physician of the Pacific Medical Institute, 230½ Main St., Los Angeles, California, recommends honey to his patients, especially to those suffering from impaired digestion.

Mr. Anderson also mentioned the fact that Dr. Talmadge, of Salt Lake City, recommended honey for the treatment of typhoid cases. If we are correctly informed, Dr. Talmadge furnishes honey in limited quantities to convalescent typhoid patients.

Mr. Anderson has already had some experience along that line. One child of his was stricken with the fever; but as the child was very sick he did not dare to give honey, although it had been favorably recommended. Subsequently another child came down with early symptoms of typhoid, and he immediately began giving honey. This second child had a very light attack, and soon recovered. Mr. Anderson remarked that typhoid is a terribly wasting disease. If a food can be given that will keep up the strength of the patient he will be able to throw the disease off. We understand that both Dr. Nuttall and Dr. Talmadge recommend honey as a nutritious food, and remarkably easy of assimilation.

One of these physicians, we do not remember which, has used honey by injecting it into the rectum, with excellent results, in cases where the patients were so nearly gone that it was impossible to take food through the mouth.

These facts are exceedingly interesting and valuable, especially as they confirm the statements of other physicians and food experts, Marian Harland to the contrary notwithstanding.

LOOKING FOR SOME ONE TO TEST A NEW UNCAPPING-MACHINE.

MR. L. R. FERGUSON, of Harvey, Ill., has recently made some important improvements on his uncapping-machine. He desires to get in touch with some person or persons who will have considerable honey to extract, not less than 10,000 lbs., so that the machine as now improved may be tested. Mr. Ferguson has built a number of machines, each one better than the one preceding, and he wishes now to determine whether the last one built is enough of a

success so that it can be put on the market. Interested parties may write to Mr. Ferguson direct, or to us. In writing, please state the kind of frames, whether regulation shallow top-bars, or wide ones; whether Hoffman or unspaced frames. Should there be a number of responses, Mr. Ferguson would have to send the machine to the nearest person who could test it.

IMPROVEMENTS IN CAPPING-MELTERS AND WAX-SEPARATORS.

WE have on hand a series of three articles from Mr. F. J. Severin, San Diego, Cal., describing his new capping-melter and wax-separator, the latter especially being such an improvement over other separators that one of the most extensive bee-keepers in the United States, Mr. J. W. George, of Imperial, Cal., for whom Mr. Severin has been working, has decided to make nine of them, one for each outyard. Mr. Severin has had practical experience in the yards of some of the largest producers of the West, and on this account he is especially qualified to know just what is required of a capping-melter and wax-separator. We shall use these articles in the near future, and are sure our readers can not fail to be interested in some of these solutions of troublesome extracting-house problems.

THE L. W. AVANT PLAN FOR SUCKING HONEY OUT OF THE COMBS WITHOUT OPENING A HIVE.

SOME days ago we received a letter from Dr. E. F. Phillips, of the Bureau of Entomology, Washington, referring us to an article by Mr. James Heddon, published in GLEANINGS for August, 1875, page 97. As this article describes a process for taking honey out of the combs exactly the same as that which has recently been made the subject of a patent by L. W. Avant, of Atascosa, Texas, we are placing it before our readers as another evidence that "there is nothing new under the sun." Dr. Phillips said he thought that, when Mr. Avant brought out the process of taking honey from the combs without opening the hives, he (Mr. Avant) had certainly struck something new, and we thought so too. But read this:

I am *very*, *very* sorry to tell you "air castle" to the ground, almost before you have got it built; but I have devised something so far in advance of it that I think you will tender me a vote of thanks. Believing that you are anxious for the *point*, I will proceed. First, you must build a tank (anywhere in your apiary or thereabout), elevated upon posts or any suitable foundation; next, you must use my new artificial comb. Now, as all which I am about to explain is covered by heavy letters patent, both in this and other countries, I will without fear go on. My combs are built by the bees upon comb foundations similar to the late Samuel Wagner's, only that I use *two* foundations for each comb in the following manner: My foundations are of light sheet iron (galvanized), and are placed $\frac{1}{4}$ inch apart, and closed all around, top, bottom, and sides, so as to form a vacuum between them. Now, the bees will build their "*sells*" outward from each of these foundations. I forgot to say that I have a fine hole through the foundation at the back of each "*sell*," also a $\frac{1}{4}$ -inch hole at the back end of each comb. I also have an inch hole in the back end of

each hive. I now lay "*gass*" pipes just a little way under ground, all in connection with a large one that runs to the top of the aforesaid tank. Each of the underground inch pipes enters from the large tank pipe, to the back end of each hive. You will now see that all I have to do is to attach a force pump to the tank end of the large "*gass*" pipe, and pump all the honey from all the supers at once. I also have a 2-inch pipe running from my *elevated* tank to each of our 14 grocery stores, with a faucet at the grocery end of the pipe, from which they draw the honey as from a barrel. The tank holds about 250 barrels, and, being elevated, the faucets at the grocery stores are always full.

The above is substantially the same as my specifications. What I claim as my invention, and desire to secure to back end by letters patent, is: First, the double-comb foundations, when used together, in the manner and for the purposes described.

Second, the hollow or vacuum between the walls, or comb foundations, in combination with the said walls, or their equivalent, substantially in the manner, and for any or all the purposes set forth.

Third, the elevated tank in combination with the store-keeper or his clerks, or their equivalent, for any or all of the purposes set forth.

I will here omit the succeeding claims, and give you readers the 21st and last claim, which is, the "*gass*" pipes D, D, R, R, V, V, and the rubber pipes S, S, in combination with the hives, queens, tank, grocery stores, and my hired man who does the pumping on the tank, substantially in the manner, and for any of the purposes I have or may, or anybody else, may hereinafter for all time to come set forth.

I will close by saying that I shall prosecute to the fullest extent of the law any persons or persons who make, use, "*sell*," or *think*, or cause his or their neighbor or neighbors to think of using, making, or "*sell*"-ing anybody with my invention.

Dowagiac, Mich., July 5, 1875. JAMES HEDDON.

This article by Mr. Heddon was evidently penned as a joke, and was so considered by our Mr. A. I. Root in his footnote away back in those early days. If Mr. Heddon had at the time made a formal application for a patent embodying the claims that he provisionally drew up, and had the patent allowed, he would have barred our friend Avant from covering the same idea.

Mr. Heddon, be it known, is an all-round inventor and a genius. Some fifteen or twenty years ago his contributions were frequently seen in all the bee-journals, and we suppose there was no hive that provoked more discussion, pro and con, than the Heddon divisible-brood-chamber hive, still used by a few enthusiastic admirers of it. While he has dropped out of the bee-keeping world during the last few years, his early contribution will be read with exceeding interest. While he evidently regarded the idea as a joke, there are many who consider Mr. Avant's invention no less a joke. We may say, however, that we recently heard from Mr. Avant, and he appears to have the utmost confidence in the final success of his invention. He has, he says, eliminated some of the difficulties, and hopes ere long to have his machine perfected.

We may say further, in defense of the Avant patent, that Mr. Heddon's early conception of this same idea does not invalidate Mr. Avant's claims, for the reason that Mr. Heddon did not *develop* the idea. If we understand patent law correctly, an inventor must not only have prior conception of a thing, but he must put it into successful use in order to prevent the other fellow, who later patented it, from enjoying the legal protection afforded by Uncle Sam.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

SPEAKING of the shape of queens, p. 634, in this locality queens with slender abdomens are decidedly preferred.

C. ISAAC, p. 636, perhaps you will do better in poisoning wasps if you give the poison very weak—so weak that they will carry it home and gradually poison the whole household.

SWITZERLAND, not half as big as Ohio, and with about two-thirds its population, has a bee-keepers' association of 8463 members. We might learn something from those Swiss. [You are right, doctor.—ED.]

THE QUESTION is asked, p. 582, whether any one prefers the wider (three-inch) glass in single-tier cases. Yes, I do. Don't lots of people? Don't you sell lots of single-tier cases with three-inch glass? [Nowhere near as many as we do of the two-inch.—ED.]

WHEN RAIN came after the great drouth, the dandelions seemed to think it was spring, and came out just as in spring about September 15; and October 17 they are still in full bloom. But I don't think the bees have got much good from them—out of season, likely.

TO DRIVE ANTS away, sprinkle the earth about the hives, and the places infested by the ants, with a mixture of muriatic acid and water, having the mixture so strong that, when it dries on the ground, it will have a sparkling appearance. Repeat if necessary.—*Schweiz. Bztg.*, 397.

BROWN SUGAR may winter W. C. Mullett's bees safely where they fly every ten days, but better not try it further north where bees don't fly once a month. [From some experiments we made, we concluded that brown sugar would not go as far, dollar for dollar, as the best quality of granulated. While brown sugar may be a little better for stimulating brood-rearing, it does not compare with white sugar for wintering purposes.—ED.]

F. L. POLLOCK, p. 604, your case of swarming differs a little from the one in question. You know that cells in the brood-chamber may induce swarming. I don't think they would, or did, in that super so far above. But when a virgin hatched above, and another quailed in the cell, swarming was started above, and the swarming bees made trouble below. Of course, cells above will in time be followed by virgins; but once killing the cells will prevent that, while one can not prevent the starting of cells.

DR. BRUENNICH says, *Bienenwatter*, 218, it is much easier to introduce an old queen than one that has just begun laying; also the important item that it is easier to introduce a strange queen to a colony that has a queen which has not been laying long. He says an Australian had to come to America to tell us that, but I think the doctor has things a little mixed. Mr. Beuhne told us

that a young queen could be reared and fertilized in a hive with a very old queen, which is different.

O. B. METCALFE, your article, page 557—and a good article too—started me down to the apiary. Without a veil I hunkered down in front of a hive, and with a stick mashed a bee on the alighting-board. Every ten seconds I mashed another till eleven lay dead. The other bees paid little attention to the dead bees, and I could not see that they gave the slightest intimation of irritation. Certainly the bees didn't resent the mashing *that time*. Whether poison on a stick or other object would irritate them is a separate question.

TO UNITE without having bees return to old stand, put a newspaper over one hive and set the other over it. The imprisonment before the paper is gnawed away, and their getting down one at a time, not only makes them unite peaceably, but makes them stay where put. Pure Italians don't need the paper to keep them from fighting, but they do need it to make them stay where put. Besides, nine-tenths of the bees to be united are not pure Italians. Is there any easier way to unite? [We have never tried the plan, but we have had favorable reports of it.—ED.]

WHEN YOU SAY, Mr. Editor, p. 581, that young queens usually hatch about the day the swarm is cast, are you not talking about after-swarms? But were we not talking about prime swarms? For the question, p. 587, was about how soon the young queens hatch *after* the swarm issues. Surely you do not mean to insist that the young queens hatch before or at the same time the *prime* swarm issues. Even if you mean after-swarms, doesn't the free virgin always pipe an evening or two before swarming? [No, we were talking about prime swarms. Is it possible we are all wrong? If so, we are willing to be shown.—ED.]

"IT IS GENERALLY supposed that freezing or fumigating with sulphur will kill" moth-eggs, p. 582. Freezing will, but no amount of sulphur I ever used would kill eggs or the very big worms. You are right, Mr. Editor, in saying that combs once frozen would be safe from moth if left in such a room as S. D. House or I would store sections in, but not to "leave them anywhere." I never had a moth-tight honey-room, but I don't think a moth ever entered it from the outside. Even a comb lying in the apiary is rarely touched by moths here. South it's different, likely. [One of the things that A. I. R. used to tell us boys years ago was that, after we had fumigated the combs, they must thereafter be kept in bee-tight or moth-tight boxes or hives. We know he always made it a rule to keep the combs, after freezing, in hives insect-proof.—ED.]

Bee-keeping Among the Rockies

WESLEY FOSTER, Boulder, Colo.

BEES AND FLY-TRAPS.

On the main street of Rocky Ford two fly-traps containing a gallon or more of flies were found, and among them were great numbers of dead or dying bees, composing between one-third and one-fourth of the mass. The waging of war on the fly may need watching, so that bees may not be trapped in too great numbers.



SUGAR-BEET SPRAY KILLING BEES.

Several large apiaries near Rocky Ford were almost totally destroyed last July through a beet-spraying experiment conducted by the sugar-factory. A louse had been infesting the beets, so a mixture composed of Paris green and syrup (the latter to increase the sticking property) was used on the leaves. Bees were found dead in large numbers in the beet-fields that had been sprayed with this mixture. The experiment was an expensive one for the bee-men, and was not successful any way, for the syrup killed the leaves. The experiment will probably not be repeated, as soap-water answers the purpose better, and does not injure the leaves of the beets nor attract the bees to the poison.



BAPTIZING QUEENS.

Did you ever hear of baptism by sprinkling for bees, and baptism by immersion for the queens? Well, such are the rites administered by Mr. E. J. Wallinger when introducing queens. He uses a pan of water that has been warmed in the sun, and sprinkles the cluster of bees at the time the old queen is killed. Then he immerses the new queen, cage and all, in the water, and after a moment releases her among the sprinkled bees. By the time the bees in the hive are dry they all smell alike, and so are of one accord. Mr. Wallinger says this is the most satisfactory method of introduction he has yet found. He operates between 600 and 700 colonies of bees; is a farmer, assessor of Bent County, secretary of a new irrigation district to water 20,000 acres of land, and is secretary of the Bent Co. Melon-growers' Association.



WIDTH OF GLASS IN SHIPPING-CASES.

Possibly I have said enough about the width of glass in shipping-cases. Dr. Miller, however, asks if I am not guessing when I say that front strips one inch wide are not strong enough. So far I have failed to see any shipping-case for comb honey strong enough to withstand the treatment accorded to local shipments of honey. So far as appearance is concerned, my reason for preference of a narrow glass to a wide one, such as three-inch, is that the wide glass shows

the unsealed cells and pop-holes too prominently. The twentieth-century shipping-case with the circular hole in the cardboard is still another advance. It is unnecessary to display as much of the goods in a double tier as in a single tier, any way; and then people can use their imagination a little if they can not see all the comb that they are buying. Before I try to answer Dr. Miller's inquiry as to why any prefer the wider glass in single-tier cases, I shall wait to find out whether they do.



DO THRIPS DESTROY THE NECTARIES OF THE FLOWERS?

Several years ago the alfalfa was blooming beautifully down in the Arkansas Valley of Colorado, but the bees were getting no honey. Some of the bee-keepers asked an Agricultural College man who was in the valley at the time what the trouble was. He answered by plucking a few heads of alfalfa and jarring them over his opened palm. Twenty or thirty little mites, dark in color and lively in movement, fell out. These are *thrips*, of which there are many kinds. They are so numerous that I have been unable to find a single bloom in our garden that did not have from one to half a dozen of these little creatures within it. The dandelions are the most densely populated of the blooms that I inspected, no doubt because the thrips are very fond of pollen. I wrote to the Agricultural College, and Prof. S. Arthur Johnson replied as follows in regard to the thrips:

The thrips live upon vegetable matter of various kinds, usually living vegetable matter. They appear to be very fond of pollen and the tender parts of flowers. It is believed that they are sometimes responsible for reduction in the production of alfalfa and onion seeds by injuring the stigma of the flowers and preventing proper fertilization. The onion-thrips, often called onion-lice by growers, do serious injury frequently, by chewing the epidermis of the stems of the plants. In my garden I have noted that thrips for the past two years have injured the buds of cosmos and sometimes pinks in such a way that the flowers failed to be fertile. They are very hard insects to combat, because they are so minute when they hide in the crevices and folded parts of the plants in such a way that it is almost impossible to reach them with any kind of treatment. Greenhouse thrips are often controlled by means of fumigation.

This letter indicates, that when the thrips become numerous enough, they not only eat the pollen in the flower but consume some of the delicate parts of the flower. This destruction carried far enough would destroy the secretion of nectar, even though the thrips ate none of the nectar. The thrips are thickest when other insects abound; and if we had only had a species of grasshopper that ate nothing but thrips we might have had a fine honey crop. But the thrips did the fine-tooth work, and then along came the grasshoppers and ate the whole blossom, leaves, stem, and all.

NOTES FROM CANADA

J. L. BYER, Mt. Joy, Ont.

On page 583, Oct. 1, I mentioned having found on the front of the hive an old clipped queen with a small cluster of bees. Investigation a few days later showed that a young queen was laying nicely. It looks as if the poor old mother had been driven ruthlessly from the hive. Clearly, bees with all their good qualities have no understanding of the sense that we would call "pity."

In the notice sent out to members by the Crop Committee of the Ontario Association, regarding the crop of buckwheat honey, we are told that 100 per cent of the members report that the recommended prices for white honey were obtained. Score another for the good work of this committee which indirectly, since it was appointed a few years ago, has put thousands of dollars into the pockets of Ontario bee-keepers.

Regarding bees moving eggs, the editor of the *Australian Bee Bulletin* had better write a certain queen-breeder in California before he is too sure that *man* can not move the eggs without injuring them, as the breeder in question uses eggs instead of larvæ exclusively in all his queen-rearing operations. Then, even if a man could not do the trick successfully, surely that gives no license for saying that the *bees* can not do it—page 516, Sept. 1.

Yes, we have had fine rains since the last batch of notes was sent to GLEANINGS (page 583). Nature is again looking more like her wonted self, and the grass is quite green, even if the season is late. While the rains were of little practical value to the bee-keeper, yet they have helped what little clover there is in the country. It is indeed *very little* of this plant that is surviving in our section. Quite a number of dandelions have come into bloom since the rains; and to-day, Oct. 10, the bees are carrying considerable pollen from this source.

Relative to the high price of sugar (page 582, Oct. 1), one extensive bee-keeper here in Ontario actually profited by the unprecedented rise in the price of this article. Quite early he bought several thousand pounds of sugar, thinking he would have a heavy feeding bill. It turned out later that very little feeding was necessary, and as a result he had about 4000 pounds of sugar left after his bees were in shape for winter. As he had bought the sugar at \$5.05, and it is now just about a dollar a hundred higher than that figure, wholesale, needless to say the sugar was not a burden on his hands. By the way, I notice Dr. Miller says that sugar is 8 cts. a pound over there. I had an

idea that sugar was always higher in Canada than in the United States; but that does not look like it, as I believe the highest mark reached here was \$6.05 for best granulated in a wholesale way.

The latter half of September and the first week of October were cold and wet, with the result that those who were feeding bees at that time made very poor progress. I never knew feed to be taken so slowly. Lately we have been having fine weather; but as all my feeding was done before the change, it made little difference to me. When bees are heavy with honey, and require but little feeding, I have noticed that they do not come up over sealed stores to go to syrup as readily as when they have an empty brood-nest. This probably made the feeding go more slowly than it would have done in ordinary circumstances when the weather was cold. I think our bees will go into winter quarters this season the heaviest in all my experience.

L. C. Wheeler, in the *Review*, says that lighting a smoker with coal oil, as advocated by the late Mr. Hutchinson, causes the smoker to smell badly afterward, and will even taint the honey after being so treated. I have never tried the plan; but while on inspection work I came across different men who had tried it—some pretty good bee-keepers too, and they never reported any trouble along the line mentioned by friend Wheeler. The plan *looked* good to me, and I had often thought of having a small oil-can in each yard, loaded with coal oil; but according to what Mr. Wheeler says it might be well to do a bit of experimenting.

Editor Tyrrrell, when through using a smoker, does not empty out the unburned fuel, but plugs up the nozzle with green grass (he would have some fun finding any here just now), thus extinguishing the fire, and then when relighting he uses the charcoal that will be left in the smoker. One objection to leaving a smoker in this condition is that the creosote will glue the nozzle fast to the barrel, and then it is quite a job sometimes to break connections, and possibly the hinges will break. Of course, if *dry* fuel is used there will be little if any creosote; but with us that is not always to be had—indeed, I like the fuel damp, as better results are obtained.

D. M. Macdonald says, in the *British Bee Journal*, in speaking of the queen-excluder, "My dislike of this appliance has been recorded in the past," and then proceeds to quote three authorities agreeing with his view of the question. Messrs. Scholl and Chambers, of Texas, and the editor of the *Australian Bee-keeper* comprise the trio.

With all due respect to the opinions of the men mentioned, it occurred to the writer that, if one attempted to quote the names of extensive bee-keepers on this continent who are in favor of using queen-excluders it would take several issues of the *British Bee Journal* to provide space for the list. More than that, the great majority of extracted-honey producers would not do without these useful appliances, as they are regarded as an absolute necessity. Again, I believe that most of these bee-keepers have proved to their entire satisfaction that queen-excluders are not "honey-excluders," as is claimed by Mr. Scholl and a few others. Personally I am free to confess that, if I attempted to produce extracted honey with full-depth supers, without queen-excluders, I certainly would soon throw up the job, as the "honey-excluding" propensity spoken of is sure to manifest itself very prominently if I happen to run short of excluders, leaving a few colonies without that convenience for separating the brood-nest from the surplus compartment.



On page 519, Sept. 1. Mr. Doolittle says that bees emerging from their cells in September may survive the winter and live until May or June. If the inference is that only bees reared after Sept. 1 thus survive the winter, certainly there will be a heavy loss in bees in the yards of a York Co. bee-keeper this coming winter. For some reason the brood-nests are packed with honey to a greater extent than I ever knew before, and wintering results will be awaited with interest. For the past week or two I have been doing some requeening, and in many cases during the first week of September I found the combs solid with honey with the exception of two to four combs in the center having not more brood in each than the size of the palms. These colonies are all strong with bees; but surely if only September-reared bees survive the winter, the colonies will be in a depleted state by spring. However, I am not worrying about the matter, as I anticipate that they will survive all right. It is an unusual experience in this locality, and I can explain it only by reason of the slow flow from the buckwheat late, when the nights were cool and the bees loath to go into the supers.

There seemed to be no difference between colonies having old or young queens; but there was a decided difference in one respect—that the pure Italians were the worst sinners in the matter of packing the brood-nests with honey.



Reciprocity discussion is over for the time, and I trust I may be pardoned for referring to a rather amusing side of the question so far as it concerns honey-dealers. Of course, honey is very scarce here this year as well as in the United States, and that fact may have something to do with the circumstance I am about to relate. Some time before the elections, when the trade question was just a matter of guessing as to how the thing

would go, a well-known firm in Ontario sent out circulars saying that honey would be much cheaper after reciprocity came into force, and they strongly advised bee-keepers to sell early, as they would be sure to get better prices than later in the season. Since the election another well-known firm sent out circulars saying that since reciprocity is settled they would be able to quote prices on honey. A few weeks before this I had shipped this firm the buckwheat honey from my east yard; and now, in response to their circular, I wrote them saying that I had a certain amount of buckwheat honey for sale here in York Co., and I asked them to quote best prices. They wrote me at once and offered me less than they had paid me for the former lot. In acknowledging their communication I suggested that, after all, the defeat of reciprocity must have been a bad thing for the honey industry in Canada; but to date I have not received a reply, so I do not know what their explanation will be. The whole incident shows how the game of *working* a producer can be played, and I have no doubt that a number bit at the circular sent out before the elections.



The annual meeting of the Ontario Beekeepers' Association will be held in Toronto, Nov. 15, 16, 17. Mr. Pettit, in writing me, says it is expected that this year's convention will eclipse all former ones, both in attendance and every other respect. This is a high ideal; but judging from what I already know of the proposed program I have an idea that Mr. Pettit will prove to be a sure prophet. The attendance of a number of our well-known bee-keepers from over the line is promised, among them being Mr. Tyrrell, Secretary of the National; Dr. Phillips, of Washington, and Chas. Stewart, one of New York State's well-known inspectors. All of these men have been given a place on the program, and no doubt one of the interesting features of the meeting will be the thorough discussion and investigation of the foul-brood situation. In this connection Dr. Phillips will give an illustrated lecture, using his splendid set of lantern views, some of which show the natural color of diseased brood.

Dr. Phillips will also give his popular illustrated lecture on the behavior of the bee. As notices giving full particulars will probably appear in the journals, it will not be necessary to take much space here; but I can not refrain from giving a hearty invitation to all American bee-keepers, as well as others, to be with us and have a good time. In doing this I feel assured that I am simply voicing the sentiments of all the bee-keepers on this side of the line, and especially of those who are members of the O. B. K. A. The horticultural show will be open at the time of the meeting, and this alone is well worth a visit to Toronto, the queen city of Canada. No doubt the railway rates will be as in past years—single fare from all points in Ontario.

Conversations with Doolittle

At Borodino, New York

"I am a beginner, and want you to tell me how to use smoke, when working with my bees, so as to secure the best results."

"Undoubtedly we old fellows do not sympathize with beginners in bee-keeping as we ought, inasmuch as forty odd years have carried us so far from the beginning that some of the troubles we had when we commenced have been forgotten. But I *can* remember the time when a Doo-little fellow first looked into a hive containing a colony of live bees. I see him now with the sleeves of his coat tied at the wrists, mittens with long wrists tied in the same way, trousers fastened at the bottom, and hat with a veil that reached to the waist (the veil also tied down). With the mercury up to 85° in the shade, this bundled-up lad stood in the sun, and used all of his lung power to blow, in the direction of the bees, the smoke arising from some chips scattered over a pan of live coals. Even a beginner in the year 1911 may see the advantages he has now over those of fifty years ago. Surely, in the line of smoke for bees 'the world do move;' and I will add that, bundled up as he was, the boy got stung."

"I soon learned to take off my coat, then the mittens, to use a veil which came only to the shoulders, and bicycle-clips instead of strings at the bottom of the trousers. Some bee-keepers throw away the veil and clips; but I advise the beginner to use them and also a smoker. The practical apiarist who handles colonies of bees every day can tell, before he goes to work, about the quantity of smoke the bees will need. I do not smoke one colony in twenty, other than over the frames as the cover is raised."

"Some apiarists, whom the bees do not sting much, use no smoke at all; and one man thinks it strange that I always carry a smoker with me. I went to his apiary years ago, with two other bee-keepers; and as soon as he opened the first hive no bees seemed to hover about him; but half a dozen started toward me at once; and as I had no veil with me I beat a hasty retreat, only to be laughed at. But a moment or two afterward the other two were seen leaving also, to the amusement of the bee-keeper, whom bees rarely sting. There are a few men in the world who, for unaccountable reasons, seem to be sting-proof. Others can not come near bees without being stung."

"An old neighbor of ours, who kept bees when I was a little boy, boasted that he was never stung by bees, and I could hardly believe him. When I had been in the business four or five years he came into the apiary as I was taking off box honey just after the basswood bloom, at a time when bees are generally inclined to resent being molested. The man who worked the farm was with me, well bundled up. This sting-proof neighbor was then over 80 years old; and as he came walking in among the

hives this man shouted to him that the bees would sting him. The old man said, as I had heard him many times before, 'Bees never sting me.' Just about the time he came near us I happened (?) to drop a wide frame of sections on the frames below, and did not resort to the smoker. A cloud of angry bees arose in the air, and soon the bundled-up man was beating a hasty retreat, which caused the old man to laugh. I would willingly have followed, but I wished to put my neighbor to a test. As I saw no bees looking at him, I requested him to hold a frame of partly filled sections while I did some reaching down into the hive. In doing this I drew the next wide frame of sections up past another which was covered with bees so as to mangle and kill scores of the little fellows, making the air so full of vicious bees that I was getting a most unmerciful stinging on my hands and through my clothing. I now looked at him, standing there bolt upright, holding that wide frame of sections, with not a bee even hovering about him, any more than they were about a fence-post standing near. I now took the sections from him and closed the hive about as quickly as possible, but not on his account. As we walked out of the apiary my clothes were full of hissing bees, with a swarm of angry ones about my head, while not a bee had looked at him."

"Now, the beginner who is sting-proof needs little advice about how to smoke bees; but for such as I was it will not be out of place. Before opening a hive containing a full colony, blow a little smoke in at the entrance—enough so that a little murmur is heard from the colony within. Then, as the cover is carefully raised, blow a little over the tops of the frames, causing most of the bees to retreat down between the combs out of sight, when, if the frames are handled with care, all necessary operations can be performed without arousing the bees. However, if they begin to get nervous, and buzz about, use more smoke, blowing it over the frames as before."

"The old bees are generally the most vindictive when the hive is disturbed. When the weather is fine, most of these are in the fields, and at midday there is less need of smoke than at any other time. If the blossoms yield nectar the bees are so intent on honey-gathering that very little smoke is needed; and sometimes in the busy part of the day hives may be carefully handled, without the use of smoke. But in the morning or evening, when the old bees are all at home, it is never a good plan to open a hive without first smoking those that guard the entrance. Especially is this true when there is a sudden stoppage of nectar from any source from which the bees have been obtaining an abundance. Experience will soon dictate whether little or much smoke should be used."

General Correspondence

INBREEDING.

Some of its Possibilities; how we can Develop Desirable Characteristics in Bees; the Editor's Scheme to Mate Drones and Queens on an Island.

BY H. D. TENNENT.

Mr. Raleigh Thompson asserts, Nov. 15, 1910, p. 736, that the laying or individual reproduction of bees can not exist without swarming or colony reproduction. They certainly do not appear on the surface to be more closely connected than the laying and sitting of poultry and other associated functions of living things in which just as great variations occur. Since nothing else with which we have to do has the same complex system of reproduction we have nothing exactly analogous to the swarmless bee; but there is no lack of cases in which just as serious and fundamental variations have occurred.

The production of flowers and setting of seed are certainly closely related functions of plants, yet we have numerous ornamental plants which bloom profusely but produce no seed. The sole use of fruit to trees and plants is to secure distribution of their seed; yet there are varieties of oranges, pineapples, apples, pears, grapes, tomatoes, and persimmons, nearly or quite seedless. If animals could be propagated by division it would not be much trouble to form barren breeds. As plants, animals, and insects, so far as investigated, are (in the main) subject to the same laws of heredity, such comparisons are not so far amiss as might at first seem. In experiments with potatoes, constant selection of varieties which have devoted the most energy to the production of tubers has resulted in some which seldom or never produce seed, though themselves raised from seed-balls. It is quite probable that similar breeding from the colonies which produce the most honey would lead, in time, if widely practiced, to the inclusion of non-swarming strains if such are not already in existence.

The statement that the swarming instinct can not be eliminated by keeping bees for any length of time, under conditions unfavorable to its exercise, is quite in line with the results of modern investigation. It was formerly thought that the mere disuse of a part or function would in time lead to its being left out entirely; but it has since been shown that the complete removal of a part for many generations has no effect on its inheritance. Such changes must ordinarily come from sports or mutations affecting the germ, which occasionally occur, but the causes of which are as yet unknown and beyond the control of man.

If such a variation were once found to exist in transmissible form, its perpetuation, though involving considerable trouble, would certainly not be impossible. It is

very rare that nature sets up any impassable barriers to the perpetuation of propagable variations. Except by the rare chance of another sport, a true sport can not revert back to the original type unless crossed with it or with some other strain derived from it, and, in the great majority of cases, is not destroyed by such crossing. This is the conclusion reached by modern investigators.

If unusual length of tongue, as mentioned by the editor, Dec. 1, p. 748, behaves as do hereditary characteristics in nearly all cases among other forms of life, its hybrids with the normal form will, if mated together, give a proportion having tongues just as long as in the original sport, and pure for the characteristic. If, in the heredity of bees, differences in tongue-length should happen to belong to the rare class of cases known as non-segregating, in which hybrids breed true to the intermediate or hybrid form, as with the long ears of the lop rabbit in its crosses with other breeds, then the quality might indeed be lost by continued crossing with the common form.

But proved cases of this kind are very rare. Such characteristics as the various combs of chickens, the taillessness of the Manx cat, and the rumpless or "bunty" fowl, separate perfectly from their hybrids, and may be combined with any unrelated characters of other breeds. The same is true, to some extent at least, with long and short hair among animals, as is also apparently the case with the less tangible qualities, such as the trotting and pacing gaits of horses and the sitting and non-sitting dispositions among poultry.

But in either case, if this queen, mentioned p. 748, Dec. 1, had been in some isolated locality, "long-tonguers" might now be selling at rates which would make an ordinary queen "look like thirty cents." The drones of the original queen might, of course, not carry the characteristic, in which case they would have to be left out, and the drones of her daughters and purely descended queens used for quickest results.

It seems to me that the stand taken by some concerning the possibilities in the modifying of bee nature is too conservative for these days of seedless fruit, thornless cacti, and white blackberries. The difficulties in the way of perpetuating unusual variations in bees may be discouraging to those ordinarily situated; but there are, no doubt, many readers of GLEANINGS located within reach of islands, or otherwise isolated places, who, by a little trouble, could absolutely control drone parentage, and so might secure valuable results in improvement.

Should inbreeding have any unavoidable injurious effects, ordinarily by occasional crossing with other breeds followed by suitable selection, the strain could be kept vigorous without losing its valuable qualities. If the characteristic should not separate from its hybrids, it might be necessary to

find enough unrelated sports of a similar nature to make an independent breed.

In the few apparently unsegregating cases which are known, the qualities take an intermediate form in the hybrid. At the very worst, then, it would seem that this first hybrid form could be perpetuated. But whether inbreeding is necessarily injurious to bees has yet to be proven.

With ordinary behavior the results of crossing such a sport with the normal form could easily lead to the belief that the peculiarity had deteriorated, or had been lost, when such was not the case. If the quality sought were completely recessive to the ordinary form it would not appear at all in direct crosses with it, and in only one-fourth of the offspring of its hybrids when mated together. Whether recessive or not, this second generation would contain all possible forms, just as second-generation hybrids of the black and Italian races of bees have all combinations of their various characteristics, and so the transmissibility of a quality could not be fairly judged thus far in any thing depending upon the behavior or performance of the entire colony. But of queens from such hybrid mothers mated with drones, pure or hybrid, for the desired quality some should give colonies pure for the characteristic.

The fact that a colony as a whole possesses any quality not dependent upon environment is in itself reasonable proof of its transmissibility; and in the case of anything unusually valuable it ought to pay to take the trouble necessary for its perpetuation. Aside from this, the proportions of the different forms and combinations seen in second-generation hybrids, as of the black and Italian races, would seem to show that some, at least, of their characteristics follow Mendel's law in inheritance, and so could be quickly fixed in any desired combination by suitable crossing and selection, for there is every reason to believe that bees are just as susceptible to change and improvement as other forms of life if the right conditions are given; and as these conditions become better known there is no good reason to doubt that such changes will come.

Sports may be rare; but the existence of even non-swarming colonies would not of necessity be limited to the occurrence of sports. The fact that a colony is not able to swarm would not prevent its drones from fertilizing queens of other colonies, and so propagating its characteristic for a time in this way, just as barren stalks of corn are supposed to transmit their defect through the pollen. Injurious factors which are more or less dominated by the normal condition may also be transmitted for many generations by their hybrids, real or simulated, with it. Thus certain plants give a proportion of offspring without green coloring in their leaves, and which, consequently, can not live.

In the human species two hereditary conditions (hæmophilia and Gower's disease) are transmitted in a somewhat similar man-

ner, though those in which it appears rarely live to maturity. Among peas it is not uncommon to find defective plants which, in nature, must usually be barren. When artificially fertilized they are found to transmit their defect in regular manner.

In many cases in plant and animal life, more fatal defects than would be the loss of the swarming instinct are produced as the result of crossing different races or species. Inheritance among bees has not been scientifically worked out yet, so that the exact nature and behavior of their various characteristics can not be positively stated. Scientists will see that this is done, whether bee-keepers do it or not; for which reason it is at present unsafe to undertake to say what may not be done in modifying their nature.

The difficulties in the way of certainly detecting and perpetuating such a variation are entirely sufficient to account for the failure to produce a non-swarming breed up to the present time, but can by no means be guaranteed to prevent it when such matters shall be taken up by scientific experts not dependent on the bees for their bread and butter.

McConnellsville, O.

[Our correspondent evidently knows this subject of inbreeding, and how to secure the development of desirable characteristics, better than the most of us. We may, therefore, well sit at his feet and learn.

In the mean time, one of the reasons why we made a trip to Florida was to find some island, at least ten miles from shore, where inbreeding of bees might be practiced. But on our last trip we did not find an island that afforded the proper conditions. While rearing queens in a *commercial* way is not altogether satisfactory on an island, owing to the loss in mating over the water,* we believe it would be possible to develop certain desirable characteristics. We shall see.

In the mean time we are glad to say that our correspondent will have something more to say on the question whether it is possible to develop a non-swarming or a long-tongued strain.—ED.]

THE ORIGIN AND USE OF PROPOLIS.

Dr. Kuestenmacher's Theory Attacked.

BY J. E. CRANE.

F. Greiner, Sept. 15, p. 568, gives a translation of Dr. M. Kuestenmacher's views on the origin and use of propolis. While it becomes us humbler folk to walk softly before those so far above us in scientific attainments, yet Dr. Kuestenmacher's statements appear so full of contradictions and absurdities that they can not escape notice. His theory is that each grain of pollen is cover-

*It appears that, after copulation takes place, many times both queen and drone drop to the water just as they do on land. The queen on dry ground will take wing again; but she appears unable to do so from the water, and hence is lost.

ed with a thin coat of balsam which the nurse bees can not digest, and that this rises to the top of the stomach, together with dead grains of pollen and the husks of other pollen grains, and the bees spit it out on the sides and in the crevices of the hives, but never on new combs. He states that propolis is the oil or balsam covering all pollen grains intermingled with other substances, as wax or old pollen, and that the use of this balsam is to protect the pollen from moisture, and assist it in sticking to insects to be carried thence to the stigma of some other blossom. The stigmas of flowers do not need this assistance, however, for at the proper time to receive pollen they throw out moisture for this purpose. He adds that these pollen grains will gobble up water like a sponge. Surely, then, this coating of balsam must be extremely thin or utterly fail. He says that it required five times as much water as pollen to moisten it in the stomach of nursing bees, and that for no other purpose do bees require water. I wonder if he has ever moved bees in hot weather.

According to his theory, the amount of balsam which is the base of propolis is produced by the nurse bees in exact proportion to the amount of pollen they consume. Further he says, "the emulsion is also passed out to younger and older bees, which process of passing it about purifies what we term the milk, and strains it, removing the pollen husks." Thus he makes the process of preparing food for the young bees merely the emulsion of pollen and separation of the balsam and pollen husks. No honey is required, according to his way of reasoning. The rapidity with which honey disappears from a hive when rapid brood-rearing is in progress would indicate that something besides an emulsion of pollen grains and water is required to feed the young bees.

Again, he states that a pollen grain under a microscope is perfectly solid. Prof. Asa Gray, a very good authority, says that a pollen grain has a cavity filled with a fluid in which minute specks often float.

Dr. Kuestenmacher thinks that grains of pollen that do not absorb water rapidly are dead and of no special value to the bees, but that these grains rise and attach themselves to small drops of balsam at the upper surface of the stomach, and the shaking of the nurse bees hastens the process of separation, just as the agitation of cream separates the butter from the milk. But not all of the balsam and pollen husks are separated, for, being indigestible, traces of them are found in the intestines and excrements of bees.

His theory is that the bees do not besmear the combs with drops of balsam; yet one often finds new propolis in little pellets on new combs, and near the close of the season the bees try to seal unfinished combs with it, or with wax mixed with it.

If the color of fresh propolis is yellow to red, and the balsam penetrates the wax and gives it its color, why is olive-colored wax found in some sections of the country?

Large quantities of wax and propolis melted together as he suggests, do not unite.

If it were true that *all* pollen grains are coated with balsam, and this balsam is produced just in proportion to the amount of pollen the nursing bees consume, propolis would be as abundant in May and June during brood-rearing, when the largest amount of pollen is consumed, as later in the season. Instead there is practically no new propolis until July, after which it abounds, whether the bees are using pollen or not.

I have never observed that a queenless hive, where no pollen was used, was free from propolis. Or is it a question of digestion, the nurse bees being able to digest the pollen grains, balsam, pollen husks, and all, up to the last of June, when their digestion rapidly fails them, and the propolis nuisance appears?

Is the digestion of some strains of bees, or breeds of bees, better than others, that there is so much less propolis in their hives?

Middlebury, Vt.

[This article is in line with statements by Arthur C. Miller on page 627.—ED.]

SOURED HONEY.

Should it be Fed to Bees in the Fall?

BY E. D. TOWNSEND.

Mr. E. D. Townsend:—What is your opinion in regard to feeding bees honey that started to ferment in the comb before extracting, although the combs were well sealed? Would such honey be good to feed bees for winter, or would it injure them in any way? Would it help it to boil it? I have several gallons of such honey. Although it does not affect the taste very much, would it not be likely to ferment still more? I shall not offer it for sale, but would like very much to feed it if I can safely do so.

Morenci, Mich., Sept. 18.

ARTHUR RICE.

[Mr. Townsend replies:]

There is so much disease prevalent in Michigan that I would not recommend feeding honey to bees at any time. Sell your honey and buy granulated sugar, and make a syrup consisting of one part water and two parts granulated sugar, and you have a feed that is the equal of any, and very much superior to poor honey as a winter food for bees.

I would not offer this fermented honey for sale for table use, but bakers can often use it.

We have never had the trouble you mention, of honey fermenting on the hive, here in Mecosta or Charlevoix Co.; but when we had bees in Clinton Co., a few years ago, some few colonies nearly every year would have some of this thin watery honey. We have had honey, sealed up in good shape, that would be thin, and ferment, so that air-bubbles would be present, and the honey, when being uncapped, would run like water. Perhaps two or three colonies in a yard would be in this condition, while the others would have thick well-ripened honey. It was easy to keep this low grade of honey separate from the main crop, as one could tell the minute the uncapping-knife entered the comb, for it would slip through as if

greased. These were extracted by themselves, and kept separate. It was not the fault of the honey, but must have been a peculiar trait of certain colonies. Such bees might well be superseded with another strain.

If you must use this fermented honey for bees, use it next spring, then there will not be any danger of causing bowel trouble, as it might if fed in the fall. We will suppose your bees are wintered in a cellar, and in that case would consume, say, 10 lbs. of stores during winter. If in fairly good shape they will need something like 15 lbs. to carry them over the breeding season from early spring until the opening of the clover or raspberry season the following June. So my advice would be, use your fermented honey for these spring stores.

Remus, Mich.

BALLING OF QUEENS.

A Serious Trouble in the Tropics.

BY CH. NOEL EDDOWES.

On page 460, Aug. 15, your editorial note on my contribution to the discussion on the question "Why are the queens of natural swarms killed?" confines itself to the balling of introduced queens. My remarks referred to queens which had been born and reared in the hive, and were balled by their own bees when I lifted the cover to examine the hive. It is needless to say I destroyed the queens of such colonies.

I will give one very marked case that I observed three years ago. The bees of the colony balled and killed their own queen. I gave them a ripe queen-cell, and the virgin hatching from it failed to mate and was lost. The hive was, consequently, queenless and broodless. I then tried to introduce a queen by Doolittle's flat-cage system—the cage not being driven down to the midrib, under which circumstances the bees usually release the queen by cutting out the comb under the edge of the cage, within two or three days. The bees in this case cut out the queen in 12 hours, and killed each other by the dozen while attempting to ball the queen when she was in the cage, and killed her as soon as they liberated her.

I then attempted to introduce, by different well-known systems, three successive queens, which were all killed. After that I shook the bees into an empty box, and shut them up; and when they were in an uproar, on finding themselves queenless, broodless, and combless, I let a mated queen run in through a small entrance. On examining the hive the next day I found the queen dead on the floor, and the bees had built three pieces of comb, about three inches long and about the width of a man's thumb, composed entirely of queen-cell bases. I then threw the bees back on combs with brood from another colony, and on these started ten queen-cells, and I let them requeen themselves.

I can cite another instance which is very

extraordinary, where an old queen belonging to the hive paid not the slightest attention to her bees, following her all over the combs; and each time she entered a cell to lay they formed a ball over her while she laid, from under which she crawled out and continued laying, leaving the bees to kill each other, under the impression that they had her in the ball. I have seen those bees on three distinct occasions do this at intervals of more than a week.

This old queen was not killed by her bees; but on each occasion of an attempt to ball, there were from 150 to 300 bees killed.

These are experiences we meet with in tropical bee-keeping which are rather puzzling to the man from the temperate zone. This balling has occurred at different times during a heavy honey-flow or in dearth; but it is more common in November and December, when the honey-flow commences.

But, as I have said in my former letter, by a process of selection I have nearly eliminated this trouble.

Half Way Tree, Jamaica.

SUPERSEDURE OF NEWLY INTRODUCED QUEENS.

How to Prevent it.

BY ARTHUR C. MILLER.

How very frequently the complaint is heard that the bees superseded some choice queen recently introduced! The trouble is generally laid to harm to the queen caused by mailing, or to some injury such as a lost leg, etc. In all these cases, with rarely an exception, the queens were introduced in cages and released by the eat-out plan. Man meddled and muddled as usual. Dequeening and immediate direct introduction of the new queen is rarely followed by attempted supersedure, even though the queen came from a distance. If, however, the queen was taken in the full tide of her laying, and eased with the ordinary quota of attendants, she may have received such a shock to her system that she will never again be good.

When the bees start to supersede a recently introduced queen, the trouble may be stopped by the following procedure: Remove the started cells, also two combs of capped and emerging brood, and in their place put from another colony two combs of hatching eggs and very young larvae. That is all.

If the attempts at supersedure are resumed it can be stated with certainty that the queen is really failing. There is a rare exception when the bees continue attempts at supersedure after the transposition of brood when the queen is really good; so if the queen is particularly valuable it is well to remove started cells again and change another comb of capped brood for one of unsealed larvae. By combs of capped brood or unsealed larvae is meant where the greater part of the contained young are of the character specified. The foregoing procedure is based on fundamental laws of bee life.

Providence, R. I.



APIARY OF G. C. CHASE, ROBBINS, WISCONSIN.

OVER 200 LBS. OF HONEY FROM A THREE-FRAME NUCLEUS.

The Crop Depends Largely on the Queens; a Unique Method of Keeping the Record of a Queen Without Books.

BY G. C. CHASE.

[One of our readers, Mr. E. E. Colien, of Manawa, Wis., noticing the mention of the record made by G. C. Chase in some of the advertising of the late Geo. E. Hilton, became every much interested, and he wrote to Mr. Chase, asking for particulars. The letter which he received in reply he considered so valuable that he secured permission to send it to GLEANINGS for publication.—ED.]

Mr. E. E. Colien:—Replying to your letter of a recent date, asking me to state briefly how I managed a big surplus in the worst year on record, permit me to say that, while I do not consider I have been in the business long enough to pose as an expert, I at least have nothing to conceal, and will cheerfully tell you how I managed, as plainly as possible, and will feel amply repaid if, by so doing, I can help a fellow-laborer in the field of bee-dom.

The statement that I made to George E. Hilton was correct. I had a number of his nuclei that gave me more than 100 lbs. of surplus each, and one full colony from which I took seven frames of brood to strengthen some weak colonies that gave me one prime swarm and a little over 200 pounds of honey. My sixteen colonies and the thirty three-frame nuclei that I bought gave me in all over 4000 pounds of fine extracted honey.

I practice taking my bees out of the cel-

lar early, and then protecting them well. Two years ago in the spring my bees had dysentery; and, if I had not put them out early, I would have lost many of them.

After trying several ways for increase I have adopted the following, as giving best results:

I build up my colonies as fast as possible; and when they are strong in bees, and have from seven to nine frames of brood, I treat each as follows: Beginning with the first colony I set the hive off the stand, replacing it with a hive filled with frames having full sheets of foundation. Then I look up the queen of the colony just taken from the stand, and take the frame of brood she is on with all adhering bees, and put it into the center of the new hives, having first taken out one or two frames of foundation to make room for the easy introduction of the frame of brood, bees, and queen. After replacing the frames of foundation I put on a queen-excluder, and set the old colony on top. Five days later I set the old (or top) hive on a new stand, and examine it for any queen-cells forming. These I at once cut out, and two days later I give them a laying queen. These colonies so divided and managed for increase, with proper feeding, will, when the harvest time comes, be ready in countless numbers to enter the field of sweets.

Now a word about feeding. Let me go back to the taking of the bees from the cellar in early spring. Having given them protection, as I said before, the first day the weather permits I open every hive to see if they have a queen and plenty of stores, when I leave them until they begin to bring



An apiary of 135 colonies that produced 15,000 lbs. of honey after the whole yard was treated for European foul brood.

in pollen. At this time I take out my Alexander feeders and proceed to feed every colony thin warm sugar syrup, regardless of how much honey they may have in store. I try, of course, to equalize stores, and, later on, to equalize brood, and, as far as possible, get them built up good and strong in bees and brood. I may find some building up too fast for the little honey coming in, and appear to lack brood room. From such I take away a frame or two of honey, and replace with empty combs. The queen will climb right into these combs as soon as cells are cleaned up, soon filling them with eggs that will hatch out an army of young bees just in time for the honey-flow.

The year I had the queen from which I had taken seven frames of brood early, for increase, I went out early one cold morning and counted 103 drones outside of her hive. Of course, that meant no stores. I opened the hive and found 9 frames of brood solid from top to bottom and end to end, and not four ounces of honey. Though it was cold, they had to be fed, and at once. There was bloom, but it was too cold for bees to gather, and it continued so for nearly a week; but my timely examination and feeding saved the brood for the near-by harvest.

The majority of bee-keepers, as a general thing, do not pay close enough attention to the needs of their bees and the quality of their queens. This latter feature surely deserves close watching, although I am well aware that many believe that "a queen is a queen," and when they know that there is one in the hive they feel satisfied, and believe the crop depends on the season.

Well, alongside of the queen I just spoke about I had another that I fooled with all summer, and failed to get a single pound of surplus, or any stores for winter. Just after the full flow of nectar I destroyed her, and gave to her colony a prolific queen. They built up at once, and got in good shape for

winter on the late fall flow. Now note the difference in results, just because of the quality of these three queens. Had the prolific queen, early in the season, been given to the colony that failed to produce any honey, I would have been at least 100 lbs. of honey ahead. So much for queens.

I will now conclude my long and perhaps rambling letter by giving you my system for keeping track of queens without book-keeping, but with absolute correctness. I use tin tags of three shapes—round, half round, and square. Beginning with the round ones I tack one on the lower left-hand corner of each hive. If a queen proves good I move the tag over to the center; if very good, higher up in the center; and if extra good, giving a big surplus, I move the tag to the top of the hive in the center; and when a queen proves poor I move the tag to the right-hand corner and "discharge" this queen as soon as I can get one to fill her place—the sooner the better.

The second year I take another shape of tag; so you see the shape of the tag tells the queen's age, while the place it occupies on the hive shows her quality.

Robbins, Wis.

EUROPEAN FOUL BROOD.

McEvoy Cure Proves Permanent only where Bees are Pure Italians; 15,000 Lbs. of Honey Produced the Same Season after All Colonies had been Treated.

BY WARRINGTON SCOTT.

In the spring of 1907 European foul brood broke out in my home apiary. Being without experience in treating it, I notified the Department of Agriculture, at Toronto, and they sent an inspector to examine my bees. He pronounced the disease European foul brood. It was a poor year for honey, and I

decided to try the Alexander treatment. I united the colonies, decreasing the number from 112 to 50, and requeened them with Italian queens of the leather-colored strain. This treatment was a failure. The disease returned in most of the colonies the same fall, and by the next June (1908) it was in nearly all the colonies.

I then decided to try the McEvoy treatment. This not only proved to be a cure but a permanent one, where the bees were pure Italians; but where there was partly black blood the disease returned. I reduced these 50 colonies to 23 while using the McEvoy treatment; but the disease reappeared in only one colony that season.

The next season, 1909, the disease broke out in eight colonies, these being partly black blood. The next season there were also eight colonies diseased. I am satisfied that the McEvoy treatment is a permanent one where the queens introduced produce pure Italians of a light color. This was my experience in my home apiary.



HAND BOTTOM-BOARD GIVEN A PRACTICAL TEST.
See A. I. Root's department.

The apiary shown in the cut on preceding page is owned jointly by Mr. J. W. Free and myself. We took all precaution possible to prevent European foul brood from getting in this apiary. Having inspected all surrounding apiaries in 1908 I had the nearest diseased apiary promptly treated, it being about two miles from the Free apiary.

In the spring of 1909 Mr. Free was watching carefully for signs of the disease. He reported, on May 31, that the brood did not appear healthy in some colonies. I examined the apiary, and found European foul brood in 40 colonies out of the 135 colonies. The tall hive at the left-hand corner of the picture produced 418 lbs. of extracted honey the previous year, and was the first colony to develop the disease in the last stage. It was a great temptation to attempt to patch up this apiary by treating only those colonies which showed disease, about two-thirds of the colonies being pure Italians of the golden strain, the rest being partly blacks; but we decided to treat the



APIARY OF J. ALLEN SMITH, LAWRENCEVILLE, GA., RUN FOR BULK COMB HONEY.

Nearly all the bees kept in this locality are in box hives or nail-kegs; but bee-keeping in Dixie is rapidly coming to the front, nevertheless. All we need is a few more men like J. J. Wilder.

J. ALLEN SMITH.



ALDRICH'S TWO-STORY HONEY-HOUSE AND WORK-SHOP.

who'e apiary at once, fearing a delay might be dangerous.

As soon as the honey-flow opened we started the McEvoy treatment, beginning at the right-hand corner. The first hive was moved back of the house, and the next two colonies were shaken back in their hives and given five frames with starters about one inch deep, and their brood placed on top of the hive back of the house, which had its queen caged. We continued this treatment over the whole yard. We did not unite very many colonies, as the disease had not made much headway at the time of treatment. But it continued to spread. The weather being warm, the bees commenced to swarm out of the hives after being shaken, so we raised up the hives and placed an empty hive-body under them, which stopped the swarming-out. On the fourth day after shaking, the comb built was removed and full sheets of foundation given them; also Italian queens where the stock showed any black blood. In about twenty days the colonies back of the house were also shaken on starters and treated in the same way as the main yard.

The combs were moved to the honey-house, where they were rendered into wax. We had a large tin storage-can half filled with water, and procured the use of a steam thrashing-engine; and by connecting the steam-pipe into the storage-can the water was kept near the boiling-point. The combs and frames were thrown into this can, and the frames fished out as the combs melted. The frames being wired, a great many of

the wires were unharmed and used again. Two men were kept busy pressing out wax with presses. The slumgum was removed from the presses and put in the fire-box of the engine, and burned.

This treatment has proved to be a permanent cure; 110 colonies were saved out of 135, and there has not been a single case of the disease in the yard since, and 15,000 lbs. of extracted honey was secured the same season of treatment.

Wooler, Ont., Can.

A CONVENIENT AND INEXPENSIVE WORK-SHOP.

BY CLAYTON ALDRICH.

Every farmer, especially if he is in the bee business to any extent, needs a work-shop, for the barn is no place to scrape honey, on account of the dust; and the kitchen of the dwelling-house is usually being used for other purposes. Our shop is built on a solid concrete wall 18 inches high, 14 inches wide at the base, and 8 inches at the top, where the sills rest. The building is 16x30 ft., and the walls up to the eaves are 15 ft. high. We sheeted the outside with inch hemlock, and then put on paper and clapboards.

The lower story is divided into two rooms — the front room for a general repair-shop, where we can fix up leaky covers, old hive-bodies, bottom-boards, etc. The back room has a stove, the pipe leading to a chimney

built from the ground. In this room we extract honey, scrape sections, render wax, and do all of the other things of like nature that go with bee-keeping. We have also a large sugar-maple orchard, and this room makes an ideal place for boiling the syrup. Both rooms are sealed inside, which makes them look clean and inviting. This lower floor is of cement.

The upper story we use for storing sections, foundation, and all supplies. The walls of this room are sided with basswood, and the ceiling is of steel.

We built the roof half-pitch to save shoveling snow and to make the shingles last better. A porch on the west side prevents storms driving in the front door. There is also a door and a window facing the apiary.

It would be pretty hard to say just how much the building cost, for the rough lumber came from our own farm, and we did the work ourselves without aid. The pine lumber, the shingles, windows, doors, etc., cost about \$300. It is true that the building could have been put up much more cheaply; but an attractive building never

decreases the value of property. Every farmer or bee-keeper, moreover, should do his best to make his home and surroundings more pleasant and convenient.

Cherry Creek, N. Y.

"GRANDMA" WILSON, 93 YEARS OLD, EATS HONEY AT EVERY MEAL.

BY DR. C. C. MILLER.

Groups of honey-eaters have been shown at different times, and I herewith present a group of one that, for steadily consistent consumption of honey, deserves, if not a blue ribbon, at least "honorable mention."

Born in Scotland in 1819, Mrs. Margaret Wilson was, at the time this picture was taken, 92½ years old. In 1881 she consented to be my mother-in-law, and for the past 13 years has been a much beloved and honored member of my household.

Here is her daily bill of fare:

Breakfast.—A dish of oatmeal and cream—no sugar; then plump 2 oz. of honey in half a bowl of hot water.

Dinner.—Ripe fruit, as orange, apple, pear, etc.; then a very moderate amount of the same dinner the family has; a glass of milk and cream, bread and butter and honey, and a cup of hot water. Rarely does she taste cake or pastry.

Supper.—A very light meal—generally bread and butter and honey, with a glass of rich milk.

Just how much her remarkably good health is owing to the honey she eats; how much to her abstemious diet, and how much to a rugged Scotch constitution, it would be hard to say. Serenity of mind is no doubt another factor, and, conversely, her regimen is conducive to serenity of mind. Her memory is a wonder. She has a complexion and a freeness from wrinkles that many a woman of fifty might envy, with a disposition that would fit an angel. But then, she's better than an angel—she's a saint, and I've no doubt some of the credit for it is due to the honey she eats.

Marengo, Ill.

[Well do we remember grandma Wilson. She looks not a day older than when we saw



MRS. MARGARET WILSON AT 93 YEARS OF AGE, WHO EATS HONEY THREE TIMES A DAY.
Mrs. Wilson is Dr. Miller's mother-in-law.

her last, nearly ten years ago. We hope this consistent use of honey may help to prolong her life at least ten years more.—ED.]

A DOUBLE-SIDED SHOW-CASE FOR COMB HONEY.

BY W. J. LEWIS.

The photo illustrates a show-case designed for exhibiting our honey where it is sold. When set in a show-window it shows the color of the honey, as it has glass on both sides, and is a sign either from the inside or outside of the building. If there is a light on the inside, it shows up fine at night from the outside.

WASHING DRONE LARVÆ FROM COMBS WITH A STREAM OF WATER.

Last summer we made a little discovery that may be of benefit to some bee-keepers. We say "discovery," for the reason we never saw it mentioned in any bee books or journals. We had laid out some frames with drone brood in them, thinking the chickens would pick out the brood. Some we had uncapped. Soon after, we were using the sprinkling hose and happened to turn a small stream, under heavy pressure from the city supply, on them. I was much surprised to see every larva struck by the stream fly out of the cell, and I could clear out a comb in less time than it takes to tell it.

We are pleased to say we never had foul brood; but we have thought this plan might be used to assist the bees in clearing the combs, as we notice lately that some writers claim that the bees will clear out the disease if young queens are introduced.

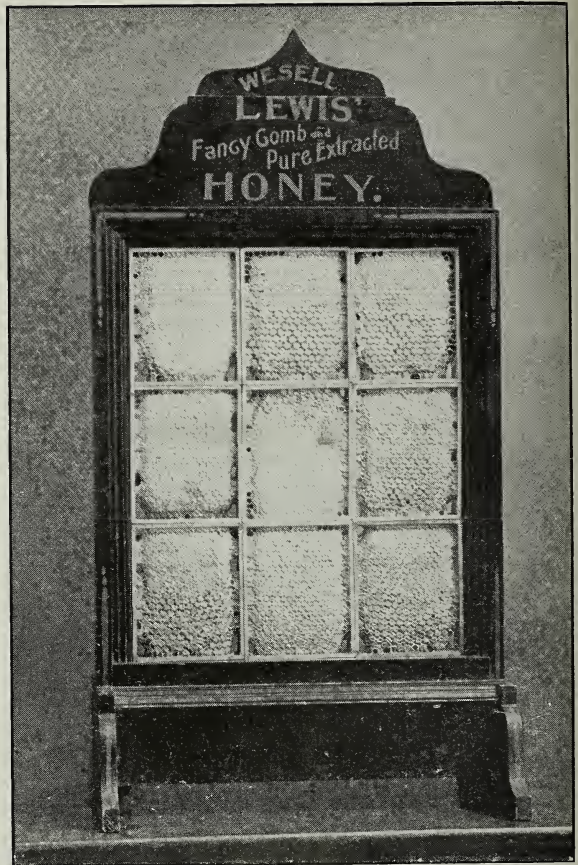
St. Louis, Mo.

[With a disease like American foul brood, where the larvæ have so changed in consistency as to become like hard glue, we question whether the stream of water would be efficacious in rendering the comb free from trouble.—ED.]

DO QUEENS LAY EGGS THAT DO NOT HATCH?

BY WM. L. COUPER.

I notice that the editor is inclined to disagree with Dr. Miller when he states his opinion, July 15, p. 418, that a queen very seldom lays eggs that will not hatch. I think the doctor is right, although, like him, I once had a queen whose eggs would not hatch. She was a young and handsome



A show-case for comb honey, with glass on both sides to allow the light to shine through the honey.

queen, and filled her combs regularly. I placed one of these combs in another hive, and the bees cleaned the eggs all out in a few days.

I had another and more remarkable case in a very strong colony, and the queen in this case was also young. I am in the habit of looking at all colonies once a week, till they are ready for supers. One week this colony was marked as very strong, with five combs of brood. I expected to find it ready for a super the next week; but it had not altered, except that the brood looked a little patchy. I did not pay much attention; but the next time, I found that there was brood in five frames still; but scattered all over were empty cells, eggs, sealed and unsealed brood, in no particular order. Beyond doubt the greater number of eggs had failed to hatch. I think this case proves that Dr. Miller, p. 418, is correct. If a queen often laid unhatchable eggs, the appearance of the brood-combs would be more or less patchy. (I have employed the clumsy word "unhatchable" to distinguish from drone eggs, which are sometimes styled infertile.) If

any thing like 25 per cent of the eggs should fail to mature, as Mr. Wesley Foster suggests, the appearance of the comb would be very patchy indeed, unless one assumes that the workers immediately remove these eggs and the queen replaces them. I have always thought that patchy brood-combs indicate a poor queen.

Last season, page 584, Sept. 15, 1910, I described a method of swarm prevention which I have successfully tried this year. Briefly put, it

consists in confining the queen to an upper story for ten days by means of an excluder. In one case I accidentally shut the queen into a shallow super almost full of honey. When I found her a week later she had a little patch of brood and eggs in one or two combs. I put her below the excluder, and this was one of the very few strong colonies that made no attempt to swarm.

I had a great many supersedure swarms this year. From my own experience, and from conversations with other bee-keepers, I am convinced that these swarms are very much more common than is generally believed. Of course a supersedure colony is often weak, and on that account not liable to swarm. If it should be strong, and a fair honey-flow on, I believe it will nearly always cast a swarm. If I am correct, this is a strong reason against letting bees do their own superseding.

A PRIME SWARM CAST THREE DAYS BEFORE CELLS WERE STARTED.

This season I had an experience which to me is unique. A colony cast a prime swarm without so much as an egg in a queen-cell. I had looked through the hive a few days before, and carefully, as swarming preparations were rife. When the swarm issued I concluded that I had been careless; and, having the swarm with the clipped queen on the old stand, I moved the parent hive to a new location. A few days afterward the bees of the swarm seemed uneasy, and, on opening the hive, I knew at once from the roar that they had somehow lost their queen. I thought the best thing to do was



R. W. Ensley and his portable extracting-outfit having a capacity of 4400 lbs. of honey extracted and put in cans in 15 hours.

to return the parent hive after cutting out all the queen-cells but one. When I came to look for them, there was not even the beginning of a queen-cell to be found anywhere. I looked over every comb three times to make sure. Having lost all its field bees it was an easy colony to look over. I then concluded that a virgin must have hatched out, though I could not see a sign of a destroyed cell. I placed this hive with the brood on top of the swarm. The next day I looked at them again, and found queen-cells started everywhere. This case seems to me remarkable in two ways: First, the casting of the prime swarm without cells started; second, that the parent colony with lots of young bees had, in three days, made no attempt to start them.

Hatzic, B. C., Can.

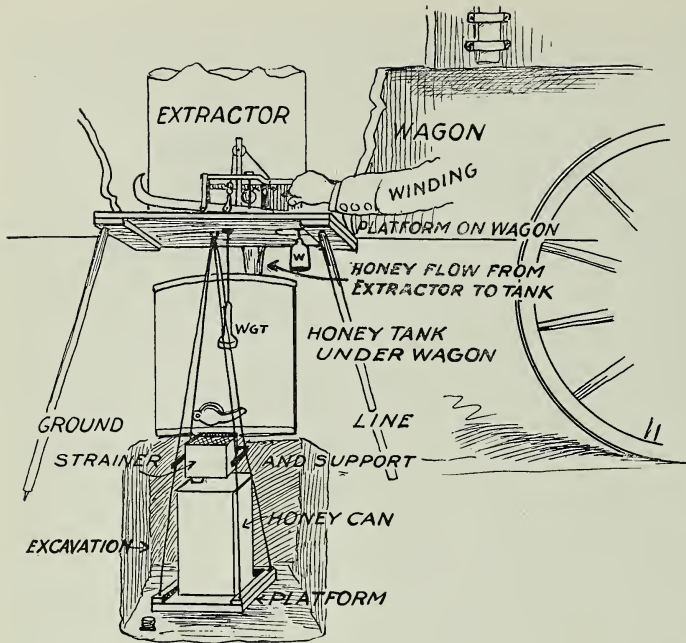
A PORTABLE EXTRACTING-OUTFIT.

4500 Lbs. of Honey in 15 Hours.

BY R. W. ENSLEY.

The illustration shows my portable extracting-outfit and my liquid-weighting machine for filling five-gallon cans with honey. It will be noticed that the wagon has an extension box, the extension on one side accommodating the gasoline-stove and that on the other side the comb-carrier. There is also an extension at the back end of the wagon, which is used when passing the carriers in and out under the mosquito-netting curtain. The wagon, as it is shown, is all





ready for extracting. The uncapping-tank stands just back of the front carrier out of sight, and after the combs are uncapped they stand in the drip-pan until they are ready to be extracted. Eight combs can be held at one time in this pan. The gasoline-stove stands just back of the second comb-carrier as shown. It has two burners, one of which is used to heat the water in which the uncapping-knives stand. We also use this stove for cooking purposes when we are at the out-apiary.

The honey from the extractor runs to the honey-tank under the wagon—first, however, passing through a square funnel having a strainer which rests on the floor and extends down into the tank. To use the weighing-machine, I dig a hole in the ground 24x36 inches, and 22 inches deep. In this swings the platform on which the cans stand while they are being filled from the tank. I also use a strainer funnel in filling the cans.

My whole outfit consists of two wagons, one of which carries the cans, hay, bedding, and rations, and, on the trip home, the filled cans of honey. The other wagon, as illustrated, carries the extracting-outfit.

My crew consists of a man to turn the extractor, my daughter to uncapp, my 11-year-old boy to blow smoke, and I myself take off the honey, return the empty combs, and attend to the filling of the cans with the weighing-machine. With this crew I have extracted and put in cans 4400 pounds of honey in 15 hours, taking the honey from the bees and returning the empty combs. On this occasion I broke the record; but I can easily take off, extract, and can 2000

pounds in eight or nine hours when every thing is in working order. Last season I canned 30,000 pounds of honey, and by the outfit I was saved an extra helper, which means something in one season.

DETAILS OF THE AUTOMATIC DEVICE FOR SHUTTING THE GATE WHEN THE CAN IS FULL.

In brief, the working of my outfit is as follows: A weight is wound up on a small reel, and held from unwinding by a trigger or ratchet. When there is sufficient honey in the can to overbalance the steel-yard the trigger is released, the weight unwinds, and falls on the handle of the gate, thus closing it; and at the same time

a bell is rung to give the alarm.

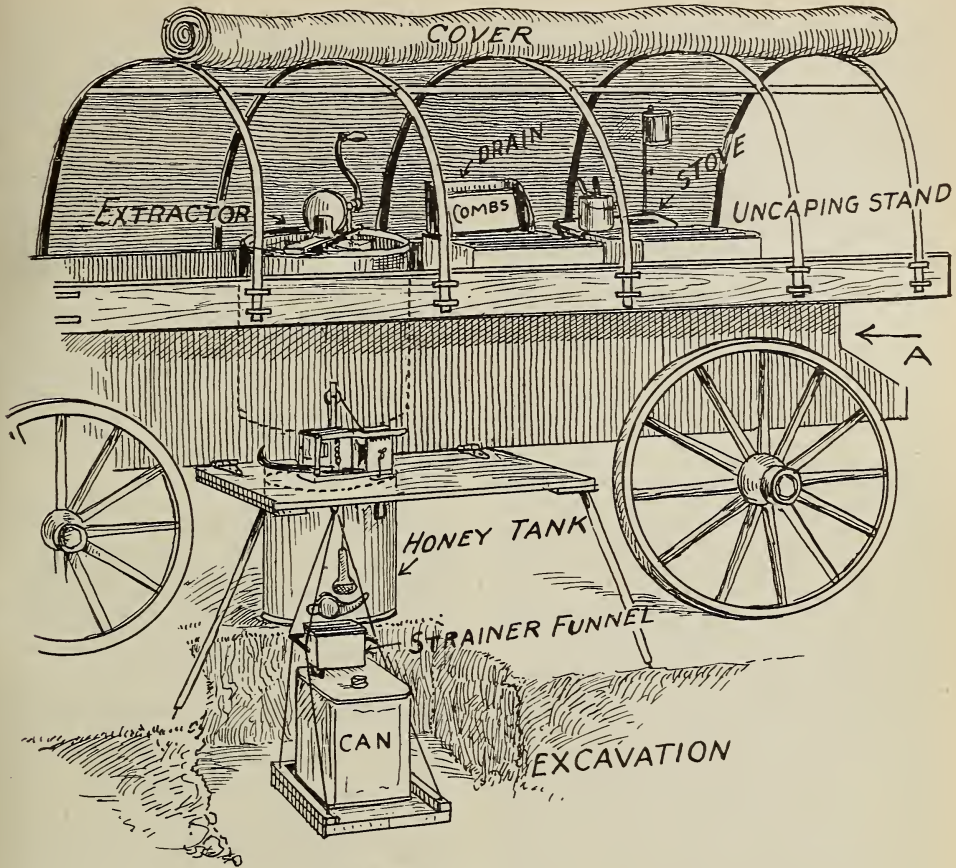
In order to arrange the apparatus ready for filling a can, the trigger or ratchet is set in position, the reel wound up until the weight is at the required height, and then the gate opened. One may then go about any other work without danger of the can running over, for the weight will always fall at the proper moment and shut the gate. I have so much confidence in this little machine that I have started the honey running, and then gone to bed, knowing that the gate will be as sure to close as if I watched it.

The frame that holds the steelyard and winding-drum is made of narrow strap iron, except one broad plate of iron that holds the old squirrel-rifle triggers that release the drum or reel. On this drum is a loose-swinging hammer that hits a bell every revolution when the weight falls to shut the gate. The swinging platform consists of a square board with a rim around three sides that hangs from the steelyard so that, when there is the proper amount of honey in the can, the weight on the arm will be overbalanced.

Cory, Colo.

[The record made by our correspondent is a very good one, especially if we consider that the outfit is a portable one, and is capable of the same output in any one of several different outyards. Since the extracting-outfit stands right in the apiary there is very little loss of time in handling combs of honey, and the animal heat from the bees is thus preserved to keep the honey thin so that it runs freely.

The trouble with most portable outfits is that they are very inconvenient; but such does not seem to be the case with this.—ED.]



BEE BEHAVIOR.

Some Things Which Are Not Down in the Books.

BY ARTHUR C. MILLER.

[Last June we met Mr. A. C. Miller at a convention of bee-keepers held at the Massachusetts Agricultural College, Amherst. During the course of our conversation we discussed the special observatory hive that Mr. Miller had invented, from which he had learned some things about the domestic economy of the bee-hive that are not recorded in any of the bee-books. We may explain that this special observatory hive, unlike the ordinary glass hives for observation purposes, has the combs built crosswise between the two glasses, instead of running parallel. Where the combs are crosswise, and built against the glass, it affords excellent opportunity to determine what takes place in the cells, even if they are sealed over. One can readily see how the bees regurgitate the honey into the cells, how they feed their young, how the larvæ spin their cocoons, because one side of the cell is covered with glass, so that the observer can witness all the wonderful operations that heretofore have been hidden from the world. Mr. Miller, we understand, has spent hours and hours and days and days in watching the bees while they were at work in this special observatory hive. Well, during the course of our conversation at the Amherst School of Apiculture, Mr. Miller incidentally mentioned some things he had discovered. We were immediately interested, and requested him to place some of these before the public. We finally made an arrangement by which this is to be done. The articles are to be first

published in these columns, and, later on, they will be compiled and made over into book form for easy reference. These will be illustrated where engravings can be used. The first of the series of articles is given herewith; and so far from being a statement of dry facts, the series, we believe, will be exceedingly interesting and practical. Please notice where Mr. Miller explains how the Aspinwall principle checks or keeps down swarming. If you read through it you will run across some things you have known before, perhaps, and some things you have not known, but which will conform to experiences which you have not been able to understand. In other words, we believe that Mr. Miller's contribution on the domestic economy of the hive will supply certain missing links that will complete our chain of knowledge bearing on certain questions. We suggest, therefore, that the man who gets his bread and butter off the bees will find something in these articles that will enable him to get more bread and butter. Here is the first of the series.—ED.]

Bees sleep, and do a lot of it. They will crawl into a cell containing an egg or sometimes a small larva, settle comfortably down, and stay there for hours at a time. Thus doth the little busy bee! They never touch the egg nor larva, and their presence has nothing to do with the hatching of the egg.

When a queen is cramped for room she will use any shaped cell or put several eggs in a cell, and sometimes two of them will hatch there and the larvæ be fed as one. Be-

fore they get very large, one disappears. There is an authentic report of two queens hatching from one cell.

Bees sometimes seal a queen-cell when the larva is only four days from the egg—ninety to one hundred hours—and the resulting queen is as fine as can be desired. This accounts for some of the supposedly tardy hatchings. The reason that the queen larva does not spin a cocoon at the upper part of the cell is because she can not reach it. She turns about and reaches up her full length, but can not go further. When pressed for room, bees will sometimes put fresh nectar in cells containing eggs, and soon after remove the nectar. The eggs hatch as usual.

When ripening honey, bees spread out all they can; hence ten frames in a ten-frame super are better than eight, as it gives the bees more "standing room." The ripening process is most interesting to watch. The large glands which open at the base of the mandibles apparently have an active part in the conversion of nectar into honey. This "standing room" probably has much to do with the non-swarmling or retarded swarming in the Aspinwall hive.

A bee packing pollen in a cell acts like a little pig rooting, and a tiny grunt from the little worker would hardly seem strange.

Workers, drones, and queens alike are very fond of digested food fresh from the workers or of brood food from the cells when it is taken out; and why they let it alone when it is in the cells is a mystery—probably due to the presence of the larva; for when that is gone, the food is promptly eaten up; and yet if conditions become adverse, larvae and food all vanish. Shall we ever know the whys?

To irritate gentle bees to the stinging-point, use cotton in any form as smoker fuel.

Comb-building, to all appearances, is a most haphazard job. One bee, after a seemingly endless lot of fussing, will add a bit of wax to the growing comb, and soon after another bee will remove it and apply it elsewhere. And yet see the result.

Unsealed honey in the brood-nest undergoes a lot of shifting—outward if the brood is increasing; inward if decreasing; and this is so, even with a pretty heavy inflow of fresh nectar.

A dozen bees can raise a good queen if conditions are right.

Bees draw down out of the supers on cool nights, not to keep the brood warm, but to keep themselves warm. The sheets of brood are superb warming-pans for cold bee-feet. Watch the drones when they are being gradually expelled from the cluster. They will mass shoulder to shoulder on any outlying brood. To keep that brood warm? Well, hardly.

The bee's tongue has four known functions: Taking up food; spreading propolis; "polishing" cells (probably with propolis); and taking up any surplus liquids within the hive.

If the food is good, bees can get along without flying for a long period in winter. Under normal conditions, then, all excrement is virtually solid. If the hive is dry, and ventilation ample, it soon becomes quite dry, and is later thrown out with capping chips, etc.

In winter the temperature within the hive and outside the cluster is, within one or two degrees, the same as it is outside the hive. Winter temperature of the cluster is close to 70° F. Bees hang back down and feet up when putting honey (nectar) in the cells until the cells are nearly full; then they hang vertically with head down. The nectar (already partly changed to honey) is discharged directly from the mouth, and flows between the mandibles and over the gland-duct openings thereon. The mandibles are kept in motion during the operation. The tongue takes no part in the operation, but is folded up behind the chin.

Providence, R. I.

[The idea that brood is a warming-pan for the cold feet of bees is a new one, and probably right. This is like a number of other things here suggested that should draw forth discussion. We don't find that cotton waste angers bees—quite to the contrary. We use dirty or greasy waste as an exclusive fuel for smokers.—ED.]

WINTERING BEES ON THE SUMMER STAND.

Upward Ventilation and Clustering Space Above.

BY ISAAC F. TILLINGHAST.

With fifty years' experience I have never yet lost bees in winter, either in doors or out, except from two causes—first, too little food; second, too much moisture.

It is really surprising how much cold weather bees will stand if kept dry; and, on the other hand, it requires not very severe freezing to use them up soon if left so that water works in, or so that the moisture which naturally accumulates can not escape by proper ventilation.

It is, no doubt, true that those who have a properly constructed cellar, well drained and ventilated, and with a dry concrete floor, can and do winter bees inside with more safety and less expense, or less consumption of food, than can be done out of doors; but as most cellars are far too moist, nine times out of ten, bees are better off in the open air. In our climate we usually have days every month when it is warm and pleasant enough for the bees to take a good flight; and I find that they keep in better health than when confined for four or five months as they usually are in cellars. So, for a number of years past I have practiced packing them for wintering on their summer stands, which is accomplished about as follows:

First the oilcloth which is kept on the tops of the frames when sections are not on, I double over to the front, leaving the back

half of the frames exposed. Then in the center of this exposed space I invert a 1-lb. butter-dish, and place an empty super on the hive. If there is more honey on one side of the hive I place the dish a little to that side. This makes a clustering-place for nearly a quart of bees, where they can generate and retain their natural body heat, and also enables them to reach the honey by going over the tops of the frames, and prevents a few getting caught between two combs, and perishing, as they sometimes do in sudden snaps of very severe weather.

Next, over this half of the hive, and over the inverted dish, I place a piece of old coarse carpet, or gunny sack; tuck it down carefully around the edges, and then fill the super with dry wheat or oat chaff.

Now I carefully fit on the cover; and if there is any possibility of its leaking rain or snow water I cover it with a piece of roofing so as to be sure that no water will work in at either top or sides.

Then I raise the rear end of the whole hive at least two inches, letting it rest upon a couple of bricks or stones so that rain or melting snow will speedily run away from the entrance, and not work in so as to freeze and clog the entrance, or keep the bottom-board wet or damp.

There is but one more source of loss to contend with. We often have warm sunny days toward spring which will induce the bees to come out while snow is still on the ground, on which many will alight, become chilled, and not be able to return. When I have empty supers to spare I sometimes place one under each hive, which puts the bees so far from the entrance that they are not so quickly incited to emerge on account of a little sunshine. This may also be accomplished by shading the entrances.

Sometimes when, on a very warm day, they will come out in large numbers, I spread straw or waste hay thinly on the snow for a rod or two in front of the hives, and most of the bees will alight on this rather than on the snow, and then they get back without much loss.

If the hives are not in a naturally sheltered location it is well to protect them from the winds by standing some corn fodder or straw against the north and west sides.

When I find a colony dead in spring I invariably discover either that they have died from lack of stores, or, more frequently, that the cluster of dead bees is wet and moldy. If packed so that the moisture will escape, yet their bodily heat be retained, we never have weather cold enough to freeze them.

If it is desired to remove or change location for a short distance, some old bees are sure to be lost, and it is much better that this should occur in the late fall; for as these are old field bees it is, perhaps, an advantage rather than an actual loss to dispense with them now, rather than feed them two or three months or more and then have them die of old age before beginning work in the spring.

Factoryville, Pa.,

GLASS-FRONT SHIPPING-CASES FOR SHOW-CASES.

BY WESLEY FOSTER.

John Welton had the largest grocery business in Spring City. Whether he had the finest show-cases, the biggest cash-register, or the finest display in the show-window is another matter. John's customers were not of the social set, neither were they from among the very poor. John never had a call for a nickel's worth of flour nor a quarter of a dozen of eggs. He was doing a good business with carpenters, teamsters, and tradesmen of various pursuits. His rent was not excessive, for he was off the main street, though on a good corner where most of his customers got off the car when coming from work.

He told me to size up his situation, and see how near I could come to estimating correctly the amount of honey he could sell a month. I estimated that he could sell lots of honey in quart, half-gallon, and gallon pails, and a good amount of comb honey if it was not too high-priced, say a fair weight of No. 2 honey that he could retail at 15 cents straight.

I went home and made up a shipment of a dozen gallons, a dozen half-gallons, two dozen quarts, and four cases of nice No. 2 comb honey. I wrote to him that it would be a good idea to make a window display of the honey for a few days, arranging the pails in a nice pyramid on top of the cases of double-tier packed comb honey. The comb honey in those cases sold right along, about a case a week, and he wrote for more, for he wanted enough to make a little showing all the time. I had some corrugated-paper shipping-cases, and I thought I would show John something in a case that would ship without cracking a single capping, so off went four more cases. Back came a letter saying that he expected to get the honey in the same kind of cases he had had before, and that, when it came, as he had used the other cases to display peanuts, walnuts, dried fruits, and raisins, he had to empty all of the fruit and nuts out and put the honey from those homely, awkward old paper cases into the wood cases to display; and in getting the honey out his clerk had broken two and run his finger through three more. He did not have any breakage in shipment, but called attention in terms more picturesque than polite that there were other considerations than freight-handling.

John has been supplied with comb honey in his choice glass-front display cases for over a year now; and, as fast as emptied, nuts, dried fruit, etc., go into them. He says they are nice and handy. I do not object, for my advertisement is on every one, and one of John's customers said one day, "Why, don't you sell any thing but honey?" So I think it pays to put honey in a glass-front case. It certainly pays John and me.

Boulder, Colo.

Heads of Grain from Different Fields

An After-swarm from a Colony that had Cast No Prime Swarm.

The following incident of this season includes such various conditions and results that I am prompted to relate it for the benefit of those who have not had a similar experience.

Colony 4 was shaken May 14. The old brood-nest was left on top as an extracting-super (with excluder), no increase being made. Almost six weeks later, on June 23, both stories were "boiling over" over with bees, and there were a dozen or more fine, large, bright-yellow queen-cells on two combs, so here appeared to be an excellent opportunity to try an experiment in swarm prevention.

Two nuclei were made, the intention being to give each a frame with queen-cells, making three frames for each, taken from the mother colony, and to give a ripe queen-cell from another hive to the mother on the old stand. However, by some bungling the ripe queen-cell was given to a nucleus, and a frame with queen-cells was left on the old stand.

The old queen (clipped) had been missing several days. The colony was sifted to find her, so there was no doubt of her absence. On July 2, about 9 o'clock, I heard a great roar in the air, and I knew at once there was something doing. Fortunately there was a hose near by, so by the judicious use of the spray nozzle the swarm was headed off and caused to settle on a young tree within 50 feet of their starting-point, and within 20 minutes the bees were shaken down and hived on the stand which they have since occupied.

I immediately opened the old hive to learn conditions. Several unhatched queen-cells and three virgins were found; and from the first cell, which I opened, out walked a fully matured and lively queen. The remaining cells contained nymphs and larvae only. Evidently they were ready for a high carnival at after-swarming, and all this after and in spite of having had two nuclei and half their queen-cells removed.

The swarm was examined two days later, but no queen could be found; so I supplied them with another frame of brood in all stages, thinking the first brood which had been given at hiving might have become too old to make a queen. Three days later I was relieved to find that no cells had been started. A day or two later a fine laying queen was found at work. Without question the swarm issued with a virgin queen; and at my first examination, which was very thorough, she must have been out of the hive on her wedding-trip. Four frames of foundation were beautifully drawn out on both sides by the end of a week, and there they rested for lack of any honey-flow. Feeding was kept up until there was something for them to work upon.

A résumé of the incident presents these interesting points, without trying to state all:

A colony shaken (without increase) cast a swarm.

Swarming was not prevented by a severe division of the colony after preparation had begun.

The use of the water spray probably saved the swarm, which, being out with a virgin queen, might have "dusted out" for good and all.

The virgin which I "hatched" by picking the cap off the cell, being fully matured and lively, had apparently been held in her cell in accordance with some purpose known to the bees. The presence of three others was interesting, to say the least.

If I had carried out my intention to give the mother colony a ripe queen-cell on the old stand (which was the only thing to do, as any nucleus placed there would represent the mother colony and be the subject of the same conditions), and to give the two frames with queen-cells to the two nuclei on new stands, my experiment would have had a different result as I believe. All vacant spaces in the hives were filled with frames of foundation of course.

The greater interest in bee-keeping, aside from the financial, lies in the careful observation, study, and analysis of these experiences which are likely to be unexpected and most surprising.

New Jersey.

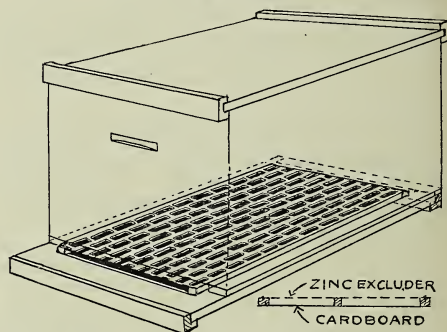
B. KEEP.

[Your experience reminds one of the saying that bees do not go by rule. But perhaps the first shaking was done too early to thwart the inclination to swarm; and the colony, after having lost its clip-

ped queen, and having given up a part of its bees to make the nuclei, was really in the same condition that any colony would be after casting a prime swarm, especially since it was provided with the queen-cells; hence the after-swarm was to be expected.—Ed.]

Queen-finding Sieve to Fit in Hive-entrance.

The queen-sieve described by J. P. Brumfield, p. 536, Sept. 1, has suggested what I think is a simpler one. I fashioned a piece of zinc excluder, 10 x 14 inches, to strips of wood $\frac{1}{2}$ x $\frac{3}{8}$ inch on the two sides and one end; then I tacked a very thin piece of board or cardboard to the other side of the wood and one or two small supports in the center to keep the board and zinc apart. I have this under the brood-frames so that it is the only entrance to the hive. When the bees are shaken on a sheet in front of the hive they must enter through the sieve, and the queen will be secured.



No sharp lookout has to be kept; in fact, none at all, for whether one examines the sieve in fifteen or twenty minutes, which is the usual time for them to go in, or five hours later, as I did with the last hive, the queen is sure to be in the sieve. All I have to do is to put in the sieve, shake the bees, and let them take their time to go in, and the queen is surely safe.

Claremont, N. H., Sept. 21. ROBERT FORSYTH.

Goldenrod as a Honey-plant, etc.

This plant is known here in the mountains of Kentucky by the name of stickweed or farewell-weed. It has been here only about twenty years, but it seems especially adapted to our soil and climate. It grows all over cleared land and by the roadsides, and in cultivated fields and meadows. It is ready to bloom in a piece of land I had planted to corn last year, and it is safe to say that it will be in all fields next year that were cultivated this year. Its stalk grows from six inches to as many feet, with several stalks in a bunch, and it has a woody appearance. In good land a person can hardly get through it. It begins to bloom about the first of September, and remains in bloom until frost, or about three or four weeks. It blooms just early enough to escape the frost.

You ought to see the bees at work on it. They store lots of honey from it. Last season I had five or six nuclei that did not have any stores at all on the first of September; but when I went to feed them for winter I found they had 20 lbs. of nice honey which they had gathered from this source. I weighed this honey. They had about half a gallon of bees and a little brood, but all came through the winter in good condition, and made my best colonies this season. I am of the opinion that the bees will crowd their brood-nests with this honey, but am not prepared to say to what extent bees store honey from this plant each year.

Langdon, Ky., Aug. 25.

J. S. JOHNSON.

Old Queens Voluntarily Leave the Hive to Die.

Mr. J. L. Byer, in his Notes from Canada, Oct. 1, p. 583, says, "It would be interesting to know how bees as a rule dispose of their superseded queens." My opinion, based on years of observation, is that queens are treated just like all other old worn-out

bees. They simply walk out of the hive and die. In several instances, when I have found a queen on the outside of the hive, I have opened it and placed her on the top-bars. Then after a few hours I have found her again on the outside with a few bees with her. I take it that, when the old queen is past all laying, the young queen will not sting her to death; and when she is ready to die she walks out to do so, just as other old bees do.

Those who winter bees in the cellar can easily make the experiment to see whether those bees that walk out of the hive can be returned. They will invariably walk out again, to die for the good of the colony. I think that those superseded queens that are still laying eggs may be stung to death by the young queen before she lays eggs; but I myself am fully convinced that the bees of the hive never drive their own queen away.

Nashville, Ill.

S. P. SCHROEDER.

How are the Closed-end Frames in the Simplex Hive Secured?

On p. 172, March 15, Mr. O. B. Metcalfe describes and illustrates the Simplex hive used by Mr. Carl Ludloff. I am interested in this form of hive, and would be very glad to know how the frames are secured to the bottom-boards—that is, whether a hook is used similar to the ones on the old Quinby frames or whether it is some different method. I should like to see a further description of that entrance, frame, bottom-board, etc.

Mohawk, N. Y.

C. R. MORTS.

[This question was forwarded to Mr. Metcalfe, who replies:]

I should be glad if some American would try the Simplex hive in this country and report on it. At Cuerna Vaca I found that Mr. Shoemaker was using this hive almost entirely, and he said it was far ahead of the American hives, of which he had several in the ten-frame size. In the city of Mexico I met a Mr. Allen who has given the bees a thorough test in American hives, and he was just getting in some of the Ludloff hives as a last effort to make a go of the business. He is a reader of *GLENNINGS*, and I wish he would tell us how the Ludloff-Simplex hive came out with him.

To what I have already said in the March 15th issue I can add that the hives in Mr. Ludloff's home yard are all supplied with a concrete base. This is well shown in Fig. 10. They are thick and heavy, and could not be moved around to any advantage; but this concrete base is unnecessary, as the hives could rest on any kind of stand such as we use. A $\frac{3}{8}$ -inch board 10 in. wide, and as long as the hive is ever expected to be, and with narrow $\frac{3}{8}$ -inch strips tacked along the edges, forms the bottom. The frames are made so that the two side-bars extend down past the bottom-bar about $\frac{1}{4}$ inch; and as the frame measures 10 in., inside measurement, it fits down astride this bottom. The two $\frac{3}{8}$ strips hold the bottom-bars up so that the bees may pass back and forth on the bottom the full length of the hive. The bottom-bars are $\frac{1}{4}$ inch narrower than the top and side bars, thus leaving a half-inch bee-way between the frames for the bees to go up wherever they like.

The Simplex hive has an entrance at either end. This entrance is about $2\frac{1}{2}$ in. long and $\frac{3}{8}$ in. deep.

The frames are held snugly at the bottom by pins stuck through holes bored in the bottom-board, and at the top by a strong cord which is fastened permanently to a peg at one end, and tied (each time the hive is closed) to a peg in the other end. The pegs and the strings may be seen in Figs. 9 and 10.

Mr. Ludloff claims that the greatest advantage which these hives have over the American hive is that the entrance is at the side of the frame, and therefore does not let the air blow in between the frames to chill bees and brood. He also claims that they are of much more uniform temperature. They probably are when they are as precisely made as he turns them out, for he is a fine workman.

I have just been thinking that this Simplex hive might be a fine thing in some parts of this country for queen-rearing and for making increase. To make increase, Mr. Ludloff puts in a division-board which goes clear to the bottom, and a few days later he gives a queen to the side where the queen did not happen to be. It certainly would not be difficult, with a wire-screen division-board for this purpose, to maintain a one-frame queen-rearing nucleus at one end of each hive. The hive would

keep it warm, and it would do the hive but little harm.

Mesilla Park, N. M.

O. B. METCALFE.

Italians v. Blacks; Buckwheat Sown with Corn.

I note, Oct. 1, p. 600, that J. W. Lemry, of Texas, managed to make a test of honey-gathering between the Italian and black bees. His showing is so different from my experience that I am prompted to let him hear from me. I shall go back to my first start, not that the test was made a long time ago, but to show how faithful and devoted I have been to black bees.

Some 35 years ago, when I was a young man, a friend whose family I had treated through several cases of sickness made me a present of a colony of black bees, and I have kept the same stock all this time, and at times I have had as many as 80 colonies. But finding all my time was demanded in my profession, and I could not neglect my pets, I sold off until the bees were reduced to only four colonies. I began to get lonely, as they were always company for me, especially in my leisure hours; and last fall, 1910, I bought 18 colonies of fine Italian bees, and the spring started off with a good flow from clover. I put on two supers with 48 sections over each colony, and in a very short time there was nothing for them to work on. I left the supers on, however, until Sept. 20, when I removed them all, and from the four colonies of black bees I have an average of 30 lbs. each. Having lost one of my Italian colonies by robbers last spring, the remaining 17 had an average of just 5 lbs. each. All of them were in the same apiary. The difference is enough to cause me to ask whether it depends on the climate. I leave this for some one who has made a more thorough test.

Mr. Briggs, of Iowa, inquires, Oct. 1, p. 602, regarding buckwheat sown in the corn, so I will give my experience this season. The drouth in May dried up every thing, and I was put to my wits' end, for I wished to avoid having to feed the bees. Having over an acre of corn in a rich black prairie loam, and as no buckwheat is sown in this section, I sent forty miles for some, and on the 1st of July I sowed it in the corn, but not very thick. I had a man go between the rows once with an adjustable cultivator, and we had a shower of rain the first night. On the 16th I had a furrow run between the potato-rows, and drilled buckwheat in them, and on the 25th I made another sowing among the potatoes. All three sowings made good growth. You may imagine me out in that corn and buckwheat watching the bees and listening to their lovely and reconciled hum. It was an experiment on my part, as I had never heard of its being tried. I want to say to our friend Briggs that, if his surroundings are like mine, he need not fear for the results, as the flow of nectar was certainly good, judging from the way the bees worked on it in the forenoon; but owing to the multitude of bees in this section it was but little for all.

Goodland, Ind., Oct. 11.

M. L. HUMISTON.

Serious Automobile Accident.

Our friend J. W. George, while riding in his automobile in Los Angeles, met with a serious collision with a street-car. He himself escaped without serious injury, and so did Mrs. George; but his son was badly hurt—a leg crushed, and other injuries that may result fatally, although he is making a brave fight for life, and Mr. G. is hoping for the best. The son was on the way to the depot to take the train for one of the State agricultural schools. Mr. and Mrs. G. have the sympathy of all.

D. D. B.

A Remedy for Ants.

For keeping ants out of hives, make a strong solution of gasoline and moth-balls, and with a brush or feather apply to the corners where the ants crawl up on the hives. If your experience is like mine you will not be bothered any more by ants. I have not been troubled by them since.

Bedford, Ind., Sept. 23.

A. C. BENNETT.

A Few Good Reports.

This season we increased our bees from 12 colonies, spring count, to 44, besides getting over a ton of honey.

Minnedosa, Man., Aug. 10.

A. T. HARPER.

This year I had 30 stands, spring count, and got 3500 lbs. of extracted honey, and increased to 65 stands, which I think is doing very well.

Lonoak, Cal., Oct. 4.

P. E. HALLETT.

Our Homes

A. I. ROOT.

But I say unto you, Love your enemies, bless them that curse you, do good to them that hate you, and pray for them which despitefully use you and persecute you.—MATT. 5:44.

Then came Peter to him, and said, Lord, how oft shall my brother sin against me, and I forgive him? till seven times?

Jesus saith unto him, I say not unto thee, Until seven times, but until seventy times seven.—MATT. 18:21, 22.

Last Sunday, Oct. 15, Mr. T. B. Lanham, Secretary of our County Y. M. C. A., addressed our Men's Brotherhood in the basement of the Congregational church. He told a little story of some of his early experience in early life that impressed me so much that I asked him to let me have it for one of my Home papers, and here it is:

HOW I "WON OUT."

A few years ago I had the honor of being elected a member of the town council in the little southern town in which I lived. This was considered quite an honor for a young man, as I was only nineteen years of age at the time. During my administration, one Sunday three boys decided that they would "paint the old town red." They "tanked up" on booze, got in their rigs, and drove through the streets at a tremendous rate, etc. On the following morning they were brought before the council. I might say that such cases came before the council in our State instead of before the mayor. Our mayor was a man with a strong backbone; and after we had discussed the matter very thoroughly, he thought, and the other members of the council thought, that we ought to make an example of those young men for their own sakes as well as for the sake of other boys, and so he imposed a heavy fine—twenty-five dollars each. I do not know why it was, but they seemed to censure me for the fine being so heavy; and one of the number—as fine a specimen of humanity as I ever saw (over six feet tall), who played football with a college team—said that if I came down out of that courtroom he was going to open me up—meaning that he was going to use his knife on me. Well, I knew he was a better man than I, but I did not propose to stay in that courtroom always. So after we adjourned I came down the steps and passed very near him. He did not cut me. I can not tell why, because I knew, and I knew that he knew he was the better man. I had simply done what I believed to be my duty, and had no animosity whatever against those three boys, all of whom were as good friends as I ever had.

The next day I met the three young men on the street—Ben, Charley, and Frank. I spoke to them, calling them by name. None of them noticed me. I thought that, perhaps, I might be mistaken, and so I resolved to speak again. I spoke to them the second time, but with the same result. Then there was a fight on in my life. I had often heard the old saying, "Three times and out," and so I said I would try the third time; and if they did not speak then, they could—"go to Boston." I met them the third time and spoke to them, but not one of them replied. I had often heard my old pastor say that we ought to put God to the test; and that was a testing-time for me, and I decided that I would continue to speak to those fellows. I passed and repassed those three boys almost daily for three months, speaking to them just as if nothing had happened, and each time there was no response from any of them. All the time the Devil was saying to me, "You are humiliating yourself by running after those boys for their friendship. Why don't you be a man?" Many such suggestions came from him; but I determined to win out in that fight. After three months, one day I spoke as usual, "Good morning, Ben, Frank, and Charley" (for the three were usually together), and I noticed that they nodded their heads. After that they began to speak, and we soon became as warm friends as we ever were. Now, I think this is worth while.

But this is not all the story; for this same young man—this athlete—the boy who was going to

"open me up," preached to me the greatest sermon I ever heard from any one. It was less than a year after this story I have just given you, that an uncle of my friend the athlete rode up on horseback to the little store in which I was at work, and said, "Ben wants to see you—he is dying." I was never so shocked in my life; for in that little town I knew everybody, and every thing that was going on, and yet at that time I had not even heard of Ben's illness. I did not say a word, but leaped up behind this man on his horse, without blankets, and we rode to the boy's home, which was just a mile from the square, as fast as the horse could go. I went into Ben's room. He was as conscious as I am just now. He said, "Tom, I am dying, and I have sent for you. Look over on the table and get that Bible of my mother's; and I want you to read from that, and pray with me, for I want to say to you that I have confidence in *your* kind of religion."

Now, I ask you if all the humiliations I underwent (and I grant you they were many, and the fight against the old self was hard) were not worth while. I had not always done that, I assure you; but this one instance is a bright spot in my life today, and I thank God that I did not yield to self and to the insinuations that came from Satan—for I believe that all such come from him. I yielded to the influence of a higher power.

The above strikes exactly on a point that is being considered and discussed all over our land at the present time. This man, only nineteen years old, was called upon to see that the law was enforced against some boys of his own age, and who were his personal friends. How often the question comes up, "Shall one be just as ready to see that the law is enforced when it strikes a personal friend or neighbor as somebody else?" Friend Lanham does not tell us how much he had to do with imposing the fine of \$25.00 each against his three comrades. From what I know of him I suspect he put personal friendship out of the question, and considered only the good of humanity or the good of his own little community. Ex-Governor Frank Hanley, who has been prominently before the political world for several years past, was scored unmercifully because he refused to screen a personal friend—one who not only stood high in the community, but a man who had been prominent in helping him to the governorship. Because this man had done him many and perhaps great favors in times past, should he permit him to go "scot free" on that account? Mr. Hanley decided to do his duty before God and before humanity, without regard to personal favors or personal friendship; and I fear that many people will never forgive him because he *did* his duty.

In the case before us, one of the guilty boys was a college athlete—a leader, perhaps, among the other boys. In a personal conflict, Mr. Lanham (at that time) would have been only a child in his hands; and yet, knowing his threats, he unflinchingly came out of the building and passed close by him. I have had some trials of that kind myself. Years ago I visited a young man in our county jail. The circumstances were something like those that surrounded my friend Fred whom I have recently told you about (p. 188, Mar. 15). The boy seemed to

be soundly converted, came to our prayer-meeting, and took part. I had told him the story of Fred's emancipation, and he seemed to be very much impressed by it. We all thought him honest and sincere. In a few months, however, he made a visit to his old home, and when he came back he brought a young lady with him whom he introduced as *his wife*. As he had never before mentioned being married, the transaction did not look right, and I finally told him he must show us his marriage-certificate or he would not be permitted to work in our establishment. This was a reflection on the character of the woman he was living with, as you will notice. And he told around town that the next time he caught me off by myself he would teach me a lesson I would always remember, or something to that effect.

Not long afterward I saw him at a distance, and walked up to him and asked him about his threat. As he had been a desperate character it seemed quite probable I might receive bodily injury. He was angry; but I went over the matter gently, and assured him again that, notwithstanding his conduct, I was still his friend, and a friend of the young woman in question. Little by little he softened down, and finally admitted I was right. For some reason unexplained I could not persuade him to be legally married to the woman he had been living with, but he sent her back home, and *tried* to live down the episode. Friend Lanham did not suggest that the *Holy Spirit* protected him and myself also, but one who is doing God's bidding is seldom molested.

I do not know just how many of you have had experience in being "snubbed" by having some one you have offended turn his face the other way when you pass him, or refuse to reply or look toward you when you address him. As friend Lanham suggests, it is a pretty hard matter to keep on when you are *repeatedly* ignored.

I once put out my hand to a man in the jail who was angry because I reported him for being intoxicated on the street. Instead of taking my outstretched hand he put both his hands behind him. I said:

"Why, friend A., won't you even shake hands?"

He replied, "Mr. Root, I will shake hands to get rid of you, but for no other reason."

"All right, my old friend," I replied, "let's shake hands that way. That will be better than nothing at all."

Of course I then left. Some time afterward I tried to explain to him that I was only doing my duty. He turned on me and said:

"Mr. Root, that operation of yours took several hard-earned dollars out of my pocket, and I am a poor man, and have a family to support."

I put my hand in the money-drawer (for it was in my store where we were talking), took out some bills, and asked him to figure up all the expense, and offered to pay it. To my great surprise he softened instantly,

and changed about as if by magic, and smilingly replied, "No, no, Mr. Root. I shall not take a cent of your money. You were right and I was wrong. You simply did your duty, and I will try to do better in the future."

It was the first time the poor old man had been in jail; but although he had been addicted every little while to this bad habit, none of his friends and neighbors would undertake to have the law enforced—probably out of respect to his wife and family.

Yes, I too have many times passed through the experience of having the Devil suggest that my religion was making a fool of me; but sooner or later I had my reward.

Those who have read GLEANINGS since the time it was started may remember that, when I began publishing *Our Homes*, our journal was for a brief time ruled out of the mails on the grounds that it was simply an advertising sheet. The man who was editor of our county paper, and at the same time postmaster here, had been all his life an avowed infidel. He and I had been on friendly terms up to the time of my conversion. After that it seemed to me he left no stone unturned to harm me or my business. Getting our journal excluded from the mails was only a sample of many things. Of course I did some most earnest praying; and as I felt that God had called me to start these Home papers in our journal I had faith to believe that he would *overrule* even the authorities at Washington. Hon. James Monroe, of Oberlin College, was at that time in Washington as a member of Congress. My old pastor, Rev. A. T. Reed, wrote to Mr. Monroe, stating the circumstances. Mr. Monroe carried this letter to the Postmaster-General; and a letter, saying the decision in regard to our journal had been reconsidered and was withdrawn, reached Medina *just in time* for our next issue. I distinctly remember our postmaster remarking to me with a cynical smile that he would probably have the privilege of selling me quite a lot of postage-stamps. As he did so, he removed his cigar from his mouth and puffed a cloud of smoke (which he knew had always been peculiarly offensive to me) near my face. I made no reply, but I remember I had faith to believe our journal would reach the homes of our subscribers, without a great lot of expensive postage-stamps. Well, when this man came near to death he sent a particular request to see me. To my great surprise he was anxious to see me in order to tell me he had accepted Christ Jesus as his Savior. Let me go back a little.

After his repeated unkindnesses, which had always been met in the spirit of our text, he came down to our factory one morning and said something like this:

"Mr. Root, you and I have been for a long while at odds and ends. Now, there is no need of it. I can help you, and you can help me," etc.

I was surprised at this, even though our difficulty had always been on one side (for I had tried continually to "do good" to the

man who had seemed to hate me), and at times I felt a good deal discouraged because, year after year, it seemed to make no impression on him. Well, he went on to tell me what his errand was. He said our business was enlarging to such an extent, especially our mail business, that our Medina postoffice was entitled to a higher class, thus giving him a larger salary. He said that all that was needed was my signature. I stopped and thought a while before I replied. Should I, by my signature, give this man a bigger salary as a reward for what he had been doing in times past as postmaster? He, by misrepresentation, had caused our journal to be excluded from the mails. He had done me harm in ever so many ways whenever opportunity offered. Should I now, when circumstances made it possible, do him this favor? I confess I was for the time undecided. Perhaps it was the memory of our other Bible text that brought about my decision.

Not very long after this his health failed; and when he came to face death he wanted to see the man whose religion he had so long ridiculed, I mentioned the matter to the pastor of the church—the one who preached the funeral sermon. As the sick man was a very prominent citizen, quite a crowd had gathered, and I think the sermon was preached in the open air, as it was on the first day of June. When the minister mentioned that the deceased, before he died, accepted Christ as his Savior, a man by the side of me, who had been an intimate friend of the deceased, said to me quite audibly, "That is a lie." He who knew him so well could not believe that one who had been so pronounced against the *Son of God* could have changed so suddenly, even if he was face to face with death. Lest some may think he may not have been quite in his right mind before this confession I may remark that he lived several days after his talk with me, and he read his Bible and some other books after his change of heart.

Just as I finished dictating the above, my good friend W. P. Root called my attention to the fact that he had in his possession a paper that I dictated to him on the 21st day of May, 1890, and which, for some reason or other, has never been put in print. I dictated it while the facts were all fresh in my mind, to meet such an occasion as this if it should ever arise. As it gives some details not recorded in the above I think it will be very proper to put it in right here.

On the 20th of May, 1890, I called on my friend ——— and had quite a talk with him in regard to his new stand in regard to the Scriptures, and especially the character and divinity of Christ. At the very first he stated very clearly that he accepted Jesus as the Son of God. He said he had been for some time questioning the miracles and the divine conception of Jesus, but that he had finally, as a last resource, and the only reasonable and consistent course, decided to accept it all, and to trust himself entirely to the mercies of the Son of God. He expressed great admiration for the humility of Christ, and for his life of self-sacrifice. When I suggested that Jesus pleased not himself, he said that expressed it exactly. Humanity, as a rule, seeks first its own pleasure and gratification; but Jesus ignored self, and gave his whole life for

the good and comfort of others, forgetting himself to such an extent that he never even once used his miraculous powers in the least degree for self-gratification, nor even to procure food when faint and hungry. In parting I expressed to him my great joy to know of his new stand, and asked him if it were not a great comfort and a great relief to feel that the whole matter was settled, and that he was resting all his hopes on the solid Rock, Christ Jesus. Said he, as nearly as I can remember, "Mr. Root, it is the greatest comfort and satisfaction I have ever known in my life." At one part of the conversation I gently urged the importance of announcing in his own paper his changed views. I told him of the influence of his own opinion, and said that it would be helpful to a great many other people. I urged the matter until, with tears in his eyes, he said he would write it up fully as soon as he was able; but for the present he said he was too sick and too weak to write any thing. He has read very extensively all the prominent writers, especially those who touched on theology and the different religious beliefs of the past; and after having considered all these, and after having thought it all over these many months when he was confined to his home by sickness, and unable to read any more, he has come to the deliberate decision that Christ is to poor sinful humanity all and above all. He agreed with me, that the greatest event that ever happened in the world's history is God's message delivered to a sinful world through his only-begotten son.

May 21, 1890.

A. I. ROOT.

And now let us have one stanza of the beautiful hymn that has been sung so many times since it was first used by Moody and Sankey:

Lord, now indeed I find
Thy power, and thine alone,
Can change the leper's spots
And melt the heart of stone.

Can the Ethiopian change his skin, or the leopard his spots? then may ye also do good that are accustomed to do evil.—JER. 13 : 23.

NEVER INSIDE A SALOON; THE HAND BOTTOM-BOARD TRIED.—SEE PAGE 657.

Dear Mr. Root:—I am sending a picture of myself and wife among the bees. I am one man 24 years old who was never inside a saloon, and never tasted liquor of any kind. The son and grandson of Methodist preachers who were both bee-keepers. I like the way you are fighting the liquor-traffic. We are having a hard fight here in Tennessee, but have come out on top so far.

As you will notice in the picture, I am trying the Hand switch-lever bottom-board, and will say that it is surely a grand invention. By its use I got 80 lbs. of comb honey from two colonies when the crop was almost a total failure in this neighborhood—few colonies storing as much as 25 lbs. My father, W. P. Banks, and I take GLEANINGS, and look forward to its coming the 5th and 20th of each month with pleasure. Our Homes is about the first thing to draw attention. Long may you live to fight the liquor-traffic.

Liberty, Tenn., July 10.

J. I. BANKS.

LANGSTROTH'S OLD HOME, ETC.

Mr. Root:—On p. 574 you say, "The old house is there still. The name of the town, Colerain, has been changed to Lyonsville, because of a trolley line that runs up the valley." I am a native and a resident of Hancock, Mass. A former pastor of the church in town came here from Colerain, therefore I think if the town name had been changed I should have noticed it, as the legislature would have had to pass an act to that effect. The manual for the General Court, 1903 (Massachusetts), gives town, Colerain; postoffices in town, Colerain, Lyonsville, Adamsville, Elmgrove, Line, Griswoldville, and Shattuckville. As to the reason of these offices receiving their names I am in ignorance. The first Italian bees and movable-comb hives that I ever saw, two of my schoolmates procured of Mr. W. W. Cary, driving to his place, each bringing back a colony. That was about 1867. Each hive had the Langstroth patent painted on the front. I am not keeping bees at present, but have in the past. My father and grandfather had them, and as

a boy I was interested in them, although the sting was painful and would swell badly.

HOW APPLE-SEEDS GET ON THE HILL-TOPS, ETC.

Another thing might be added. You say, "I can not quite make out how any apples originally rolled uphill." The settlers in these hill towns

built on the higher grounds. The old cellars, foundations, and stones all indicate that; and, further, cows are very fond of apples, and seeds are scattered through that source, as is indicated in our pastures, some of which are grown and others are growing up to forests. ELMER S. GOODRICH.
Stephentown, N. Y., Sept. 26.

POULTRY DEPARTMENT

A. I. Root

FORECASTING A LAYING HEN.

I think I have had correspondence more or less with Mr. C. W. Leonard, of St. Augustine, Fla., for the past two years. He is an enthusiast on poultry, especially laying hens and running incubators. I will introduce you to him by a letter which I received last spring.

Mr. A. I. Root:—One of your journals refers to the 300-egg hen as a sort of chimera. Well, so far as my knowledge goes she is, as I never saw one; but I discovered a peculiar fact last year, which makes it seem to me that she is not only a probability but a near one. Had we more trap-nests I believe we could find her already with us. A White Leghorn and a Brown one commenced to lay in November, 1909. They were both 24-day fowls. Here is their record for 13 weeks:

Brown.—5, 4, 5, 5, 2, 3, 5, 5, 5, 5, 5, 5—54 (including a rest of 15 days).

White.—3, 6, 5, 4, 5, 5, 4, 5, 5, 5, 5, 5—62.

Here we have a rate of 208 for Brown and 248 for White. White kept at her rate until she became broody—lost two months, and in August was stopped by jiggers from further laying (none of my hens laid from August until December). Brown increased her rate of laying as high as 27 eggs in March, and for many weeks showing six eggs.

Now, it does not require six eggs weekly to get 300 for the year; but it does require keeping constantly at it, at a trifle under six eggs. Brown laid 200 eggs in exactly nine months; and at the rate she was laying when stopped she could have got in 75 more. An average of half an egg more per week for the year would have made her rate 300 eggs; so I am of the opinion there are many hens which have done this in the past; and with breeding, there will be many more in the future.

These two hens were 28-hour ones. They required 28 hours in which to make an egg; but as the season advanced they became 26-hour hens. The whole secret of the 300-egg hen is in this—the number of hours required to make an egg, all hens varying in this particular, the one with the other, and each with itself, according to season and condition as determined by environment.

A 26-hour hen can lay six eggs weekly; and non-sitters, laying through moult, should lay 300 eggs with 65 days to spare.

The peculiar thing about the manner of laying is that a hen that lays an egg daily for 15 to 25 days will never be a 300-egger, as she will be the sitting kind. An egg each 24 hours is not to be desired. A rest is required between a certain series of eggs, say six, and these rests are equivalent to a lay-off amounting to two months for the year. If you get my meaning, and will trap-nest your Buttercups, and do some figuring, you will see that 300 eggs is no more impossible than the two-minute trotter was years ago.

St. Augustine, Fla., April 11. C. W. LEONARD.

After the above there was more or less correspondence in regard to the discovery; and finally, Oct. 7, he writes me as follows:

My discovery will do all I have claimed. It requires but two eggs to be laid, as a rule, although the first few eggs of a pullet should not be depended on; and it is necessary to note an early morning egg of one day and the second egg on the following day.

The trap-nest is not required for ordinary flocks; but as we are to observe each hen temporarily, some method of recognizing her by a mark must be used. Trap-nests do not classify hens in the

sense I mean. They gather and assist to record the egg, and give total laid.

Friend Leonard's article contains several pages more; but I have thought best not to submit the rest until we have reports from different localities and from different people—see page 23, advertising department of our last issue.

I now wish to make a suggestion right here. Some of you may think it is visionary, and getting into "machinery" a little too much. For instance, with all the duties I have on hand in Medina it is very inconvenient for me to watch a certain hen, even if she is in a pen by herself, and tell exactly at what hour of the day she lays an egg. If friend Leonard is right in his theory we need a nest attached to a time-clock that will, without any watching, record at what hour she went out on her nest and laid an egg. With this arrangement we could put our hens in a suitable pen by themselves, one after another, and the clock would tell us whenever we came around *when* the egg was laid. Who will furnish a nest with such an attachment, or any other suitable mechanism to keep record automatically of the time of day the egg was deposited in the nest?

If friend Leonard's letter is correct, a flock of hens will be found to lay something like this:

One day and a skip; another, two days and a skip; still another, three days and a skip, or something after that fashion.

Later.—While I have had almost a lifetime of experience with poultry, and as much of friend Leonard's theory agrees, as far as I can recollect, with past experience, still I felt somewhat uneasy in regard to it. I remembered that our Ohio Experiment Station at Wooster has quite a poultry-plant, and a skillful man in charge of it, and it occurred to me that our various experiment stations are the very best place in the world to get unbiased opinions, based on actual experience. I have seen them, on my visit to the station, removing hens as soon as the hens had laid, examining the leg-band, and noting down their rate of laying. I accordingly submitted the matter to them, and below is the reply:

Mr. A. I. Root:—Replying to your letter of October 17, I am pleased to state what our records show concerning the egg-laying discovery.

We will consider, first, "Do all laying hens have a fashion of laying an egg every so many hours—some 27, some 30, some 36, etc.?" From our trap-nest records of about 300 hens we find that they do not follow any such rule. It is true that a few hens lay every other day for a short time; a few lay two days and skip a day, but seldom is such a record

continued for over a couple of weeks. Taking the record as a whole, no regularity is noted.

Then, again, "Does the laying hen keep up her period of making an egg every so many hours as long as she lives?" The answer to the former question answers this one as well. She did not do it during her first year, neither does she her second year.

I wish to correct a mistaken idea in the footnote on p. 23, Oct. 15, concerning our 31-egg hen of 1910. Instead of laying once a week, as stated, she laid March 24 and 31. Then she laid seven eggs between April 2 and 22 inclusive. None of these eggs were laid on consecutive days. May 1 to 10 she laid seven eggs. In one case during this time she laid on three consecutive days, and again on two consecutive days. She rested 53 days, then laid six eggs between July 3 and 13, two of these being laid on consecutive days. After a rest of 53 days she laid nine eggs between Sept. 5 and 18, three times having laid on two consecutive days. She rested 153 days during moulting time, and then laid as high as ten eggs on consecutive days. This hen does not follow either of the rules outlined by the discoverer of the method of telling the laying hen.

Any way of forecasting the egg-laying ability of a hen would certainly be a great help to poultrymen. However, as I understand it, the inventor bases this method on two points which do not accord with trap-nest records. ROSS M. SHERWOOD,

Assistant in Poultry Husbandry.

Ohio Agricultural Experiment Station,
Wooster, O., Oct. 24, 1911.

THE SIMPLICITY INCUBATOR, ETC.; SEE PAGE 740, DEC. 1, 1909.

Perhaps a good part of our readers have forgotten about my "Simplicity" incubator. I think about the last mention I made of it was on page 239, April, 1910. I confess it was with great reluctance that I let it drop and ceased experimenting with "contact heat," especially so since I had been *praying* quite a good deal over this very invention (as I have told you); and all through this busy life of mine, the things I have prayed over earnestly, and at the same time worked over faithfully, have usually, sooner or later, developed something of value to the world; and I confess I have been expecting all along that, even if I did not succeed with this form of incubator, somebody else would; therefore it is with much interest that I read the following letter from one who is not a subscriber to GLEANINGS:

Through the kindness of a friend, most of the 1909 numbers of GLEANINGS have fallen into my hands. We are not at all interested in bees, but we are in poultry, and we surely enjoyed your articles in that department. Did you ever perfect your incubator? and have you put it on the market? We shall be on the market for an incubator in August or September, and know from our experience with the Dixie Auto Hatch this year that yours is the correct principle. We are just starting in the day-old-chick business. We did all that we had capacity for this season, without advertising. We live on the car line to Gulfport, and I painted a sign to put up; but before I could get it dry and ready we had all we could do, and I finally rolled it up and put it away for next fall.

St. Petersburg, Fla., May 15, 1911. W. E. SMITH.

You will gather from the above that the writer has been working with an incubator on the principle of the one he found described in this old journal; and I think I shall have to tell you now that I, too, have been, during the past winter, experimenting with a fifty-egg "Dixie" incubator. This incubator is the only one of any sort ever manufactured and sold in Florida; but at the present time it is sent out in a rather crude con-

dition. I returned mine in order to have it improved, and may perhaps try it again later. These incubators are made on a small scale at St. Augustine, Fla. I at once asked the writer of the letter to give me full particulars in regard to this hatcher, and received the following:

Mr. A. I. Root:—Regarding our experience with the Dixie, we have had all kinds. Last February we purchased a 150-egg machine. When it arrived we had 95 eggs ready, out of which we *did not hatch a single chick*. We commenced filling at the bottom, and filled as far as they would go. We broke nearly all the eggs to see how they were. We were entirely new at the incubator business, never having run a machine of any make, nor ever tested an egg before; but a year ago I took the *Poultry Husbandry* correspondence course with the State Agricultural Department. We found chicks dead at all stages, from a few days to a few hours of hatching. The first five lower rings did not carry one beyond the seventh or eighth day. Higher up they did gradually better. We put on the top ring some that had been under a hen two weeks, and hatched every one that did not test out. We kept putting in as we had them, and kept it nearly full until the end of the first three weeks. Then we wrote the Dixie people, and told them, as well as we could, what we had done, and that we had tried to keep the temperature at 104 to 105°. They wrote us that our trouble was too low heat, and told us to put the eggs in at the top and work them down, and to do all hatching on the lower rings. We later abandoned using the lowest hatching-ring entirely—no "luck" on that one—too cold, I judge. We did the most of our work by putting the eggs under the hen for two weeks, and testing out dead and unfertile ones, and then placing them as low down as we had room for them in the incubator. We had fine luck that way, sometimes getting 100 per cent, and an average as good as 88. We carried one lot of six clear through in the machine, with a result of 100 per cent, and some others with nearly equal success.

From my experience so far I should judge that the 50 and 100 egg machines are too short; and I think, too, that the 300-egg one that they put out would be too tall. The water varies in heat from bottom to top, and we take the temperature with a thermometer hanging in the water at the top. We try to keep it up to 108°, and do not worry if it goes to 110°; but we change it promptly when it gets up to 112, as the eggs then get hotter than they do under a hen. We are satisfied that, for *our* work, it is decidedly the best we know about. It is very handy when a hen leaves her nest or has to be removed for any reason.

We had mites so bad earlier in the season that we did not let the hens sit over two weeks.

I knew of your wintering at Bradentown, and I should be glad if we could find time to visit you there, and assure you that we shall be more than glad to have you visit us on Tangerine Ave. We go north for the summer.

St. Petersburg, Fla., May 25.

W. E. SMITH.

Now, the principal reason why I have given the above letter is that it brings out strongly a point that has not been sufficiently dwelt on and discussed by our poultry-journals; namely, that there is no incubator in the world—at least good authority has so stated—that will do as good a job from *start to finish* as a sitting hen. It may be true, however, as I have stated, that the Buckeye incubator (and may be several others) will, as a rule, hatch every fertile egg. But now just hold on a minute. How do we usually decide what eggs are fertile and what are not? Why, with an *incubator* of course. But now comes the particular special and important point: The sitting hen will always give a larger percentage of fertile eggs than any incubator. If I am mistaken in this, give me the proof. There is something that a sitting hen does to give the egg a

start that no incubator has yet accomplished.* On page 238, 1910, I stated that the eggs that had a short "send-off" of only one a day, under a sitting hen, gave nice bright chickens; and they were almost the only ones that hatched out of 60 eggs in that Simplicity incubator. Now, here is some more proof from that excellent Petaluma *Weekly Poultry Journal*:

FERTILITY—SITTING HENS AHEAD OF INCUBATORS.

In looking over the pamphlet from the Oregon farm station I find a test was made at the station to determine the relative value of hens and incubators, with the following result:

The incubators hatched 78.5 per cent of fertile eggs, and the hens hatched 96.5 per cent of fertile eggs. Eggs incubated artificially tested out 22.7 per cent as unfertile, while those incubated by hens tested out 2.8 per cent unfertile.

I want to call attention to the last sentence. With the incubator, nearly 23 per cent were unfertile; with the sitting hen, not quite 3 per cent; and this Oregon farm station gave this report, as I understand it, as the result of a number of experiments. The incubator threw out over seven times as many eggs as unfertile as the sitting hen did. I have been satisfied of this fact for some time. Now, in that excellent little book, "Poultry Secrets," by the *Farm Journal* people, the last secret given was that a lot of chicken-men in a certain locality had been having wonderful success in getting chickens, and good strong ones. They had kept it a secret among themselves; and the secret was in starting all the eggs under sitting hens before they were moved into the incubator—exactly the plan friend Smith in his letter maps out. But as soon as I read of their secret, I was puzzled to know how they managed to have sitting hens enough to furnish eggs to fill almost any sort of incubator; and I shall have to confess that it never occurred to me, until I read friend Smith's letter, that my incubator, as well as the Dixie (on the same principle), was just the machine for that business. Both the machines have circular shelves; and each shelf holds from 13 to 15 eggs, according to the size of the egg—just enough for a sitting hen. Now, here is my discovery. I do not know whether friend Smith has caught on to it or not. Start up your incubator, and start up a sitting hen at the same time. Give the hen a shelf of eggs—from 13 to 15. After she has given the eggs a start, so the fertile ones can be sorted out, put them on the upper shelf of the incubator, and again give her another

*A few days ago I was obliged to break up a sitting hen that had stolen her nest, and she had but three eggs. These eggs were up against her breast—directly against the bare flesh. She had pulled the feathers off or they had dropped off—I do not know which. As it was hot weather they not only felt damp but were greasy and shiny. Oil from her naked body had become communicated to the eggs. Now, no incubator, so far as I know, has ever attempted to furnish this animal oil that comes from a sitting hen; and is it not possible that this same oil has something to do in causing the germ to start any eggs where they would not have started at all in the incubator? Who can tell? Again, how often do we lift off a sitting hen and find an egg under her wing? Does she not in like manner "hug up" every egg in turn?

setting of fresh eggs. When *they* are found to be fertile, say anywhere from five to seven days, as you choose, move the first lot down a shelf and put in the second setting. In this way keep the hen going until she throws up the job or until you get the incubator full. Or you can have two hens or more. When the eggs show by the egg-tester that they have a good start, turn them over to the incubator. My experiment that I have mentioned showed there was an advantage in letting the hen have the eggs for even only one day. The book "Poultry Secrets" said they left them with the hen clear up to the 15th or 18th day, then gave them another setting, and let the incubator finish them out. Friend Smith does this to get rid of mites.

Some people will object to an incubator for hatching a dozen chickens every day or every week; but friend Smith had his "shingle out," "Baby Chicks for Sale." Some of you may object, because a dozen chickens are not enough to keep up the heat in a fireless brooder. I reply, this objection does not apply down in Southern Florida. A dozen day-old chicks can be put in a basket under a feather duster, or they can be managed without a bit of trouble in that warm clime, in "almost any old way." You can sell a dozen day-old chicks in the spring of the year at almost every house on the street, town or country; and the best way in the world to learn how to handle chickens is to begin with not over a dozen. The address of the Dixie incubator, if you wish to know more about it, is the Auto Hatch Co., St. Augustine, Fla.

WHITE INDIAN RUNNER DUCKS, AND SOMETHING ABOUT ADVERTISING ON THE READING-PAGES.

I am well aware that I have been criticizing our poultry-journals rather severely, and may be some of my good friends will think I had better spend more time in looking after our own journal instead of picking flaws in some other branch of rural industry. May be that is true; but here is a matter that I want to submit to all of you. If you say it is all right, then I will beg pardon for meddling, and try to keep still. In the *Reliable Poultry Journal* for September (please notice the journal is "reliable"), on the first page is a description of the new White Runner ducks. The article was written by a lady—Mrs. Fishel, and on the same page is a picture of "a small part of the hundreds" of her ducks. It is a very nice picture; and the testimony in favor of these ducks is extravagant. They are not only all white, but they run white, without any off color—"not an off color has appeared in over 2000 birds." The eggs are also white, and run white. The ducks are nice for a table fowl; and at the close of the article Mrs. Fishel winds up as follows:

To ladies who are interested in poultry, whether they live on the farm, on a city lot, or in a suburban home, I can conscientiously recommend this new variety, and even go further and urge them to se-

cure a few White Indian Runner ducks. If you do, your tables will never want for eggs and poultry, and your purses will always contain spending money.

Now, mind you, all of this is on the *reading-pages* of the journal. On the large page opposite (the first one containing the "duck story") is a full-page picture (a beautiful one) of the white ducks. This last may be one of the advertising pages, and paid for—I do not know; but we are told also that these ducks lay enormously, "simply wonderful," and keep it up winter and summer. Well, the whole article is very entertaining and instructive, and it may be all true—I sincerely hope it is; but on one of the advertising pages, in the front part of the book, the eggs are advertised at \$10.00 a dozen. Let us figure a little: 400 ducks will lay 200 eggs a year each. But may be that estimate would be a little too high for the whole flock, and so we will call it 144, or just 12 dozen. That would be \$48,000 income if all sold at the above price. The advertisement mentioned is headed "The Gold-mine of the Poultry Business." Sure! there *is* a gold-mine for somebody—that is, if plenty of customers can be found at \$10.00 a dozen for duck eggs.

Now, may be I am all wrong, and the fashion of many of our poultry-journals may be all right; but I submit the matter to our readers. Is it the fair thing to have this sort of advertising on our reading-pages, say for the very first article on the opening page? Of course I have no means of knowing whether Mrs. Fishel pays for advertising space on the reading-pages, or whether the editor pays the lady for writing her instructive and entertaining article.

A year or two ago I asked the question what our poultry-journals are for. Some college professor took it up in the periodical called *Poultry*, and this professor raised quite a breeze by saying that our fifty or sixty poultry-journals were published mainly to enable advertisers to gather in the "shekels" from the unsuspecting. I hope it is not true. I am *sure* it is not true; but I do feel that our journals on bees, poultry, and every thing else, should be published mainly to give the people at large honest information in regard to our separate industries. The reading-pages, at least, should be devoted to *this one thing* and nothing else.

INDIAN RUNNER DUCKS—DO THEY EVER SIT?

The following, clipped from the *Farm Journal*, must be pretty conclusive evidence:

I have raised Indian Runner ducks for more than three years, from thirty to 100 all the time, and have never known of a single instance of one attempting to sit or even make a nest.

Rahway, N. J.

ROBT. N. RIDDLE.

Notwithstanding the above, however, one of our two ducks which we kept last winter in Florida did try to sit on a nestful of eggs, and she fought like a tiger when I tried to take her off and get her eggs.

THE WRIGHT BROTHERS UP TO DATE, AND SOMETHING ABOUT FLYING-MACHINES.

Over fifty years ago I "forecasted" that electricity would soon take the place of steam in transportation. In fact, I went around to schoolhouses, when I was only 17 years old, to proclaim in my "lectures" (?) what was coming to pass. Like the Weather Bureau, however, things did not always come quite as soon as I predicted. It was *forty* years instead of *four* or *five*, and steam has not *quite* been done away with yet. Later on I "forecasted" that automobiles would some time take the place of horses. That has not yet come to pass, but is coming; and finally GLEANINGS was the first periodical in the whole wide world to announce the Wright brothers had made a flight of something like a mile, and whirled round and come back to the place of starting. Well, we have wireless telegraphy, fireless cookers, fireless brooders for chickens; and a fireless incubator is not exactly in sight, but it is under way. And now it is my privilege to announce—that is, to the best of my belief—that flying-machines will in time be as plentiful as automobiles. Perhaps I shall be dead and gone, however, before that happens. But there is still one thing more coming. With the fireless cookers and wireless telegraphy we are going to have powerless flying-machines. Orville Wright has already left the ground on a glider, without any power whatever, and has gone up in the air and remained stationary for almost ten minutes. Perhaps he is away up in the clouds by this time if a merciful Providence has spared his life* to go through with these daring experiments.

Most of you have seen great birds away up in the sky, sailing hither and yon without a movement of the outspread wings. Mankind has speculated for years past as to how this is done. Well, if I am right, these birds have simply learned the trick of hunting up a current of ascending air. The air is constantly in motion, as you may know; and whenever a body of air sinks downward, somewhere else a body of air will go upward, and *vice versa*. The sun, in its daily course, keeps up these moving currents. Well, the Wright brothers have only to acquire sufficient skill to find these ascending currents of air; and after taking advantage of these they can get to a sufficient height, and from this point they can glide down hill or go anywhere they wish to; for aviators frequently shut off the engine when up at a great height, and go many miles without making any use of their power whatever. A glider without any engine or propellers will be very much *lighter*.

Now, look out, friends, and see if my predictions do not come true. I am not a prophet. I am simply a forecaster, just as our good friend Leonard forecasts (or tries to) the laying hen. "Coming events (usually) cast their shadows before," as you may recall.

* Please notice the frequent losses of life among aviators are all or nearly all with other machines than those made by the Wrights.